Smart Computing

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In Plain English ®

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- ◆ Restore Your Desktop

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WinMe's
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Focus On: PC First Aid Kit

Web Site Tip Of The Month ...

New Look For Our Web Site—Our Web site will soon sport a new look. We've taken your suggestions and made design changes that you're going to love. Keep an eye out for these changes!

Upcoming Special *Smart Computing* Issues
Available On Newsstands ...

Guide Series - PC Today:

Free Stuff/Digital Cameras/Digital Audio

The best bargains online; reviews of top digital cameras; and tips for using digital audio.

Learning Series:

Web Tips

Learn great tips and tricks that will increase the value of your Web site to users.

Reference Series:

How The Internet Works

Get detailed explanations of how different Internet technologies, processes, and products work.

CORRECTIONS/CLARIFICATIONS

In "Platter Matters" on page 44 of the April issue of *Smart Computing*, we say, "Type minfilecache=n ("n" being the product of your RAM in megabytes multiplied by 128; for example: 16,384 for 128MB) . . . "

If you type the comma in those 16384 (16,384 as printed), the tip will not work, and your computer may not boot. If you have typed the comma, you can reverse the problem. During startup, press and hold F8 and choose Command Prompt Only. At the C> (typically), type edit and press ENTER. Your mouse won't work, so you'll have to use arrow keys to navigate. Press ALT and then ENTER for the File menu and use the Down

arrow key to choose the Open option. Press ENTER and then TAB twice to get to the Directories listing. Press the Down arrow to get to the WINDOWS folder and press ENTER. Press SHIFT-TAB to back up to the Files listing. Use the Down arrow to get to the System.ini file and press ENTER. The System.ini file's contents are now displayed in the Edit utility. Press the Down arrow key to the |vcache| section and delete the commas in the minfilecache and maxfilecache values (for example, 16,384 should be 16384). Press ALT and then ENTER for the File menu. Press the Down arrow key to the Save option and press ENTER. Press ALT and then ENTER for the File menu, use the Down arrow key to the Exit option and press ENTER. Reboot your system.

New Web-Only Articles

Access these articles by typing http://www.smartcomputing.com/May01/ into your browser and adding the bold text after each article summary.

Reviews

Hardware

Scanner: Visioneer 6200
(See visioneer.)

Laser Printer: Minolta QMS
Magicolor 6100 Desklaser
(See minolta.)

PDA: HP Jornada 720 (See hpj.)

CD-RW Drive: Micro Solutions
backback bantam 185100 (See
microsolutions.)

Software

Utility: Ontrack's SystemSuite 3
(See ontrack.)

PC Operating Instructions

Using J-Pilot To Synch Your Palm With Linux

PDA hardware and software support for Linux users has been a little slow coming, but J-Pilot lets you synchronize your Palm device in Linux. (See jpilot.)

PC Conversations

It's 2001. Where's HAL?

We had a fascinating discussion about AI (artificial intelligence) and ABLE agents with Dr. Joe Bigus, the senior technical staff member at IBM's T.J. Watson Research Center. (See hal.)

Master The Web

MyPoints.com Rewards You For Surfing

At MyPoints.com you can earn points by clicking in e-mail and visiting Web sites and apply the points to gift certificates for brand-name products. (See mp.)

Quick Studies

HTML: How To Use A JavaScript Menu (See html.)

Print Shop Deluxe 10: Working With Calendars (See printshop.)

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"Mmm..."

Powerful Packaging

A new technology developed by Power Paper may soon have movie cases talking to you, greeting cards singing to you, and fast food game pieces lighting up and flashing when you win.

Power Paper and International Paper signed a memorandum of understanding earlier this year to design and produce "e-packages" that combine traditional paper packaging techniques and microelectronics. The products will include extremely thin,

flexible batteries with embedded circuitry that can perform a variety of interactive marketing-related tasks. What makes Power Paper's batteries so special is that they are made of a proprietary ink-like substance that International Paper can actually print onto packages it manufactures using a process similar to silk screening.

The power cells are both inexpensive to make and friendly to the environment (they're made of non-toxic ingredients), and because they're

printed onto packages and don't require metal cases, they will come in a wealth of shapes and sizes. This flexibility translates into lots of possible uses, from adding interactive sweepstakes pieces to fast food containers to putting tiny players on movie packaging that play audio clips from the movies inside. Even simple attention grabbers like flashing lights will be cheaper and simpler than the LEDs (light-emitting diodes) some companies currently use.

The companies' agreement specifies that Power Paper will license its technology to International Paper, one of the world's largest manufacturers of paper packaging products. The companies introduced products equipped with Power Paper technology to the public for the first time in New York in February. International Paper announced it would begin manufacturing e-packaging products as soon as it reaches a definitive sales agreement with Power Paper, and estimates that more than 500 million e-packages will eventually be in use.

Power Paper is also working to develop partnerships with companies in the medical community, and has plans to adapt its technology for use with smart cards, greeting cards, and in electronic thermometer labels for temperature-sensitive products. Its 1.5-volt zinc and MnO_2 (manganese dioxide) power cells are just half a millimeter thick, but they can operate at temperatures from 32 to 122 degrees Fahrenheit, and they have a shelf life of 2.5 years.

What'll You Have?

A recent Arbitron/Edison Media Research survey asked U.S. respondents with Internet access whether they'd give up TV or the Internet if they could only keep one. The results of the survey aren't too surprising; overall, more people would still choose to give up the Internet than TV, but willingness to give up TV was especially high among younger respondents.

Would give up Internet

Would give up television

80%

60%

40%

20%

Internet Users

12-24   25-34   35-44   45-54   55+

Age

Source: Arbitron/Edison Media Research, 2001

Illustration: Anelia Schütz
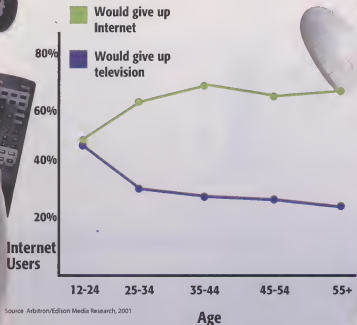
Print, Paste & Hang

LexJet, a company that manufactures digital imaging and laminating products, recently unveiled a new product that should offer some interesting possibilities to interior design professionals (and, therefore, to homeowners). WallPro is a new printable variety of wallpaper that comes in blank rolls and lets designers and graphic arts professionals print their own colors, designs, and patterns on with thermal and piezoelectric inkjet printers. WallPro comes in rolls that are 75 feet long x 36, 50, or 60 inches wide, and once users finish printing a roll or section they can apply laminate or spray-on protectant and hang with standard wallpaper paste.

Because of its size, WallPro is restricted to use with wide-format, professional printers, and LexJet spokesperson Chris Cudzilo says the company doesn't currently have plans to create a narrow-format version for desktop printers. "However," he says, "The technology creates limitless possibilities, and as wide-format printers become less expensive, or if consumer demand becomes great enough, who knows?"

E-mail Marketers Address A Growing Concern

Market research firm NFO Worldwide and Return Path released a study in February that highlights one of the problems companies that use e-mail as a marketing tool are running into. It found that 88% of e-mail users notify friends and family members when they change addresses, and 48% notify business associates, but just 37% notify Web sites they visit regularly, and only 31% inform businesses that send them e-mails. Only 24% notify sites where they make regular purchases, which makes it hard for businesses to keep customers informed of sales and promotions, or to offer them coupons and rebates.

Most people (57%) who change e-mail addresses do so when they change ISPs (Internet service providers), but people also change for privacy reasons (29%), changes in jobs or schools (26%), or for better e-mail service or features (17%). Others change to avoid spam e-mail (16%). The good news for marketers is that many users (74%) simply add multiple addresses instead of changing and may do so because the process of updating everyone they get e-mail from is too much of a hassle.

Read The Web Like A Book

Despite the Internet's popularity, some people still prefer reading books or magazines. E-Book Systems designed its FlipBrowser Gold software to make surfing the Web more like reading a book, and to make sharing your favorite Web pages and photos with friends and family easier to do.

The program lets you compile selected lists of Web pages into online e-books that you can browse by turning virtual 3-D pages as if you were reading a paper book. You can also have FlipBrowser create e-books by recording the Web sites you visit in the course of a session online, or build online photo compilations and send them to others as Web files. Your e-books use standard browser controls like Back and Forward buttons, and you can rearrange pages to taste and create tables of contents containing thumbnail previews of each page.

You can create a book with a different Web page or photo on each page, or create centerfold pages that span two pages each. Thanks to FlipBrowser's WYSIWYG (What You See Is What You Get) interface you always know what your e-book will look like when it's done. When you have finished creating an e-book, you can print a hardcopy version or upload it to E-Book Systems' Web servers, where anyone with an Internet connection and a Web browser can look at it.

The software requires a 166MHz or faster IBM PC compatible with Windows 95 or a newer operating system and Microsoft Internet Explorer 5.01 or higher. It also needs at least 32MB of RAM, 9MB of hard drive space, a VGA monitor with 16-bit color or higher, and a 33.6Kbps (kilobits per second) modem. We installed our copy in about 90 seconds, rebooted, and were creating our own e-books in no time. E-Book Systems offers a boxed version of the software for $19.95, or you can download it from the Web for $14.95.
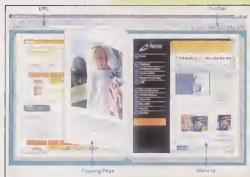
1-800-Money Pit

Any Way You Want It

According to a report from MyRatePlan.com (http://www.myrateplan.com), an independent online evaluator of wireless and long distance service plans, there may be a good reason why you cringe each month when you pay your phone bills. In February, the site announced that Americans waste more than $7 billion each year on wireless and long distance phone service. At that time, The Waste Clock, a real-time counter at MyRatePlan.com that tracks how much money people waste on phone service, had nearly reached $1 billion for 2001.

The company says telecommunications is one area where many consumers can comfortably cut back on spending without having to settle for inferior service. This is largely due to the incredibly competitive nature of the industry, and if you're willing to do some comparison shopping, you may be able to find service plans that suit your needs more economically.

When evaluating your wireless service, for example, don't opt for a regional or national one-rate plan that waives roaming charges if you rarely leave your local calling area. Also, look for plans that include more free minutes, because even if you only use extra minutes occasionally, they usually cost you more than moving up to a plan with more "free" minutes. MyRatePlan.com recommends packages that offer extreme discounts for calls made during off-peak times, and suggests that even if you're happy with your plan you should compare it to new ones every three months.

Where long distance is concerned, watch for long distance plans that include monthly fees. It's easy for companies to disguise them with extremely low per-minute rates, but be sure you consider the total cost of each plan. Like wireless service, you should shop around for long distance plans every few months or so because rates drop frequently, and be sure to read the fine print.

You can compare your plan to others available in your area at MyRatePlan.com by entering your ZIP code and answering a few questions about your usage habits. The site also helps consumers with travel packages, credit card accounts, real estate, insurance, package delivery, Internet service, online brokers, and satellite TV.

There are an amazing number of portable digital music devices on the market today, but there aren't many with the versatility of Digisette's DUO-Aria Multi-Format Digital Player. You can listen to the DUO-Aria with the included pair of headphones, but because it's shaped like a cassette tape it also plays in your car stereo (or just about any cassette player).

This cool player has 32MB of built-in flash memory and comes with a MultiMediaCard slot on top that you can use to add another 64MB of memory. Its onboard DSP (digital signal processor) is upgradeable, and it comes with a single 12-volt rechargeable NiMH (nickel-metal hydride) battery that Digisette says will play up to six hours of music or nine hours of spoken voice, such as books on tape.

You also get a carrying case with belt clip, a 110-volt battery charger, and a car charger that plugs into your car's cigarette lighter with the DUO. Digisette packs in a CD-ROM containing its own DUO-Aria Manager software, as well as RealNetworks' RealJukebox file conversion/media player software and software for interfacing with Audible.com's store online.

We unpacked our DUO and stuck its battery in the charger. While the battery was charging, we installed the included software, and when it was done we loaded the battery and connected the DUO to our PC's USB port. All that was left to do was dump some CD files into the unit's onboard memory, unplug the DUO, and go.

The DUO-Aria has an estimated street price of $199, and you can find it at major online retailers including MicroWarehouse and TigerDirect.com. Audible.com also offers a $50 rebate program for users that subscribe to its service for a year.

DUO-Aria Multi-Format Digital Player

$199
Digisette
(866) 434-4473; (973) 455-7084
http://www.digisette.com

New Products

Quick takes on the latest hardware and software to hit the market at press time.

Hardware

Casio WQV-2-1

ATXPOW450PRO Power Supply

Startech.com * $149
Pump up your PC's power with this 450-watt power supply
(800) 265-1844
(519) 455-9675
http://www.startech.com

AVS300 Speakers

Altec Lansing * $39
New and inexpensive two-speaker and subwoofer system
(800) 258-3288
(570) 296-4434
http://www.altecmm.com

DS-2000 digital voice recorder

Olympus America * $249
This recorder uses a SmartMedia card as large as 64MB for up to 22 hours of recording

Digital Photography On The Sly

Casio has a digital camera for folks that love taking pictures but hate hauling cameras around wherever they go. The WQV-2-1 is a wristwatch (complete with time, date, stopwatch, and five alarms) with a built-in digital camera that weighs a manageable 32 grams. It has 1MB of internal memory and can hold up to 100 pictures along with alphanumeric notes or titles. You can transfer them to your PC using the watch's infrared data transfer port and the included PC receiver unit, where Casio's software converts them either to bitmap (.bmp) or JPEG (.jpg) file formats ($199.95; 800/836-8580, 973/252-5570; http://www.casio.com).

(800) 347-4027
(631) 844-5000
http://www.olympusamerica.com

eTower 633ids

eMachines * $549
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(877) 566-3463
(714) 481-2828
http://www.e4me.com

HP LaserJet 3200m Printer/Fax/Copier/Scanner

Hewlett-Packard * $699
This Hewlett-Packard product puts everything you need in one package
(888) 999-4747
(650) 852-1501
http://www.hp.com

Lyra2 Digital Audio Player (RD2211)

Thomson Electronics * $399
The Lyra2 plays Windows Media and RealAudio files as well as MP3s
(800) 336-1900
(317) 415-4913
http://www.lyrazone.com

NetVista A20i

IBM * Starting at $688
New IBM PC has lots of options
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(914) 499-1900
http://www.ibm.com

Pavilion 7850 PC

Hewlett-Packard * $1,049
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http://www.hp.com

PlexWriter16/10/40A CD-RW drive

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http://www.plextor.com

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(510) 651-1900
http://www.presenter-to-go.com

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QPS * $429.00
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(714) 692-5573
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http://www.belkin.com

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http://www.westerndigital.com

Z82 Color Jet Printer

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(606) 232-2249
http://www.lexmark.com

Software

Adobe Photoshop Elements

Adobe * $99
Amateurs and pros alike can use Photoshop Elements to edit their digital images
(800) 833-6687

Lyra2 Digital Audio Player

Foot-Long FotoMat

Digital photography is on the rise, and many users are searching for the best way to take, store, and print their digital memories. Sony has a new photo printer that creates 4- x 6-inch glossy or matte finish prints and only takes up about a foot of desktop space. The UP-DP10 is 8 1/4 inches high x 2 7/8 inches wide x 12 inches deep (without paper tray), and weighs 6 pounds, 15 ounces. Each print takes about 85 seconds to print, and the USB printer holds up to 25 sheets at a time ($329; 800/571-7669, 408/432-1600; http://www.sony.com).

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http://www.adobe.com

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(408) 536-6000
http://www.adobe.com

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(734) 973-9388
http://www.iliumsoft.com/index.html

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http://www.acdsystems.com/index.htm

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http://www.interplay.com

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http://www.extensis.com

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Sierra Studios * $49.95
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(425) 746-5771
http://sierrastudios.com/games/tribes2

Zagat Survey 2001

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PalmOS software has reviews of over 15,000 restaurants and clubs
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(201) 261-7944
http://www.landware.com

From Our Other Issues

The News

Here are some of the top stories from *Smart Computing's Guide* and *Learning Series*. These issues are available on newsstands now, and the complete text is also available on our Web site at http://www.smartcomputing.com. Look for links to these issues on the home page's left side. Direct links to each article appear in the text below.

Learning Series:
Super Web Tips

This issue will help you transform your Web site into a top-notch attention-grabber. Our techniques and tweaks will show you how to upgrade your Web site's look, tools, and multimedia. In addition, our tips from Web design experts will help you to attract new visitors and keep the users you already have. To access the following articles online, type http://www.smart computing.com/learning/webtips/ and add the bold word at the end of each news item. (Volume 7, Issue 4)

If you want to create cool Flash animations, but you don't know Flash programming, get to know the folks at ScreamDesign (http://www.screamdesign.com). Scream-Design offers FlashBlaster, a set of templates for Flash animations that you can customize, download, and add to your Web site. See **flash**.

You can help attract visitors to your site by joining a Web ring. Thousands of Web rings exist with various topics, such as "Gilligan's Island" and crochet. Even if your Web site is just a home page, there are rings that link home pages together. See **rings**.

Some of the overall best tools for creating animated GIFs are professional graphics suites that can handle far more than GIFs. Jasc

Software's Paint Shop Pro 7 comes with the complete version of Animation Shop 3, which lets even inexperienced users easily create animations using a variety of formats. The program's built-in wizards are useful for adding special effects or creating banners in a few guided steps, but better still is the

Guide Series:
PC Today

This month we show off the free stuff we found online, take a look at digital cameras, and explain all about digital audio. To access articles online, type http://www.smartcomputing .com/guide/pctmar01/ and add the bold word at the end of each new item. (Volume 9, Issue 4.)

If you're in the market for a digital camera, you need to carefully consider these factors: resolution, interpolation, zoom, memory, and ergonomics. Amateur photographers also will want to look at what manual settings are available to allow for customized photos. See **cameras**.

Digital Audio continues to be one of the world's hottest technologies. Over the past few years MP3 players have become common audio accessories. And while many of us are familiar with the suits against MP3.com and Napster, we

program's integration with the Paint Shop Pro application. You can send animation frames directly to Paint Shop Pro for editing, and the updates are automatically applied to the open frame in Animation Shop. It couldn't be easier to create animations for your Web site. See **images**.

nearly 75% of all college students have downloaded music from the Internet, according to the Greenfield Online research firm. The tracking firm ARS projects that by 2004, 25% of all media will be delivered through online download, with audio and software leading the way. See **audio**.

There's something especially satisfying about shopping for a new book or CD in your bathrobe and pajamas. You wouldn't go to your local bookstore dressed in such a way, but it is easy to shop online for anything you want at any time. Find out where the best places are to shop on the Web. We also uncover some special deals, including free products and services. See **bargains**.

Your digital audio listening pleasure can be greatly enhanced by your home stereo. Fortunately, several products now exist to get music from your PC to your main sound system using wireless technologies or your existing telephone line. We walk you 10 of the coolest products. See **pcaudio**.

EVER WISH YOU HAD SOMEONE LIKE HIM
AROUND WHENEVER YOU NEEDED HELP?

WISH GRANTED.

Scaling Mt. Olympus

A Look At Five Digital Cameras On The Summit

Test, review, and snap enough pictures with enough digital cameras and it quickly becomes apparent that a few manufacturers loom heads and shoulders above the rest when it comes to consistently producing quality cameras. Olympus is one of the true giants in this regard, churning out excellent models year after year.

We've never been shy about expressing our genuine affection for and approval of the excellent images, features, and construction Olympus' cameras typically offer. Like any relationship, there's bad to take with the good. In this case, Olympus cameras are generally more expensive and difficult to use than others, but there are only a few manufacturers we'd say have as good of a track record at producing innovative, boundary-breaking cameras.

For this review, we gathered five recent cameras from Olympus that range from a basic point-and-shoot model aimed at entry-level users to one possessing characteristics that will appeal to users with advanced, professional-like skills. Naturally, the cameras vary in price and functionality, but what remains constant with each model is the general excellence of image quality and construction each offers. And contacting Olympus for further information requires no additional skills. Call (800) 347-4027 or (631) 844-5000 or visit its Web site (http://www.olympus america.com).

settings and snapped images in four locations with different lighting, including outdoors, indoors with fluorescent, tungsten, and a mixture of natural and fluorescent lighting. We shoot our images at a resolution as close to 640 x 480 pixels as possible and at the camera's highest resolution. We transfered images to a test machine and viewed them on a 15-inch View-Sonic E655 monitor. Our reviews are listed according to the street price of each camera, which we obtain by averaging prices from several online camera retailers.

D-490 Zoom
$390

The D-490 Zoom is a classic example of a thing not always being exactly what it appears to be. On the surface, the D-490's resume suggests it's a point-and-shoot model as outstanding as any entry-level user and certain mid-level users would want to own.

The camera captures images at a high resolution of 1,600 x 1,200 pixels, which we'd rate as being way above average. The D-490 also has features not typically found in a sub-$400 model, such as the ability to capture up to 60 seconds of QuickTime movies at 15fps (frames per second). It also has five shooting modes, one-touch focus settings, four white balance settings, and a sequence mode to take five shots in High Quality or 45 shots in Standard Quality at 1.3 shots per second.

In addition, the D-490 recovers extremely quickly between shots, has 3X optical and 2X digital zoom, and can take uncompressed TIFF (Tagged Image File Format) shots that should translate into very good prints.

How We Tested

Initially, we set each camera to its default

However, dig deeper and you'll find the D-490 lacks a USB (Universal Serial Bus) port, instead relying on a serial cable to transfer shots to a computer at a snail's pace. In addition, it ships without rechargeable batteries or an A/C adapter, which can drastically improve battery life, especially when transferring images. Tacking on the cost to acquire these accessories suddenly doesn't make the sub-$400 price tag quite the bargain it seems.

You'll also find that operating the camera isn't as easy as it could be. The camera lacks a mode dial, some of the buttons on the back are fairly vague, and although the menus are easy to maneuver through, you'll need some time with the manual to get acquainted with the various icons used. In addition, we don't like the way the built-in lens cover physically bumps the 5.4mm-to-16.2mm lens when it is slid closed.

Still, the D-490 is better than the majority of entry-level models you'll find on the market. Its images in all lighting conditions are crisp and sharp, and colors are accurate and vivid. In addition, the camera's compact, solid construction makes it an excellent traveling companion.

C-211 Zoom
$550

The C-211 Zoom shares many of the same features and characteristics of other Olympus models, but it's unlike any other model the company has produced. For that matter, it's unlike any other digital camera released in the United States.

What makes the C-211 special is its ability to instantly produce prints from on the spot. Partnering with Polaroid, Olympus incorporates Polaroid's 500 Print Engine in the camera's frame to output prints on Polaroid's instant Type 500 film. Instead of transferring images to a PC or connecting the camera to a printer, the camera can create prints anytime, anyplace.

Granted, the prints you get only measure about 2 inches high x 3 inches wide, and the image quality is a bit grainy and dark. However, you can crop and adjust your images on the camera's 2-inch LCD (liquid-crystal display) before printing them. Considering you can pick and choose the images to print, and you only wait minutes to see your results on a print, the quality tradeoff isn't a bad one.

Its instant prints make the C-211 worth considering, but the camera also produces excellent digital images with a good range of color and sharp focus at a high resolution of 1,600 x 1,200 pixels. The camera's features go beyond those of a typical point-and-shoot camera. For example, you can shoot at five quality settings and take uncompressed TIFF images.

You can also access three ISO equivalency settings, programmable auto exposure settings, and auto white balance (with four preset modes) settings. The camera also records up to 60-second QuickTime movies, uses the same sequence mode as the D-490 Zoom, and uses a 5.4mm-to-16.2mm lens (equivalent to a 35mm-to-105mm lens on a 35mm camera) with 3X optical and 2X digital zoom.

All this ability doesn't come without some hitches, the most obvious being the camera's considerable size. Measuring 7 inches high x 5.5 inches wide x 2.25 inches deep, the camera is anything but travel-friendly and light; it weighs in at nearly 1.7 pounds. However, if you're willing to lug it around, you'll get a whole lot of camera.

C-2100 Ultra Zoom
$675

The C-2100 Ultra Zoom is Olympus' first digital camera with a 10X optical zoom lens. That feature alone tells you this isn't a run-of-the-mill, point-and-shoot camera. But take advantage of the lens and other exceptional qualities the camera offers will cost you some extra dollars and time spent poking around the users manual.

The C-2100's barrel-like, all-glass lens is the camera's centerpiece. The 7mm-to-70mm lens (equivalent to a 38mm-to-380mm lens on a 35mm camera) lens is threaded to attach accessory 49mm filters and lenses. It also has an appreciated stabilizing function that reduces optical shake that can occur using a long, high-powered lens. In addition, the camera has 2.7X digital zoom, giving the C-2100 a combined zoom range of 1000mm.

Beyond its zoom ability, the camera can take images at four resolutions (topping out at 1,600 x 1,200 pixels) at 12 quality settings, including four TIFF settings. It can also record QuickTime movies at 320 x 240 pixels (at 15fps up to 35 seconds) and 160 x 120 pixels (at 15fps up to 135 seconds). The C-2100 also has 16MB of buffered memory, which helps produce fast recovery times (less than 1.5 seconds between shots) and lets users take 3fps in continuous shooting modes.

We also appreciate the camera's manual focus ability, slow synch flash setting, and electronic viewfinder that functions as a tiny LCD screen to view camera settings and images. There are also four metering modes, automatic and manual white balance options, three ISO settings, aperture priority and shutter priority, and S-Program modes. In S-Program mode, the shutter speed and aperture settings are set automatically while the user selects a night, sports, portrait, or landscape option.

Despite its array of features, the C-2100 is relatively easy to use, thanks to a mode dial and four-way jog button. It also uses a USB connection and ships with excellent documentation. Overall, the C-2100's sharply focused images with rich, crisp colors impress us most.

C-3030 Zoom

$750

The C-3030 Zoom has been around for a while, but it's still one of the best mid-range cameras we've seen. Its price has fallen from nearly $1,000, but it's still not cheap. However, once you see the camera in action, you might be convinced to spend the extra dollars.

The camera offers 3-megapixel image quality with a shooting resolution topping out at 2,048 x 1,536 pixels. We saw the camera first about six months ago, and to date, its images still rate as being among the best we've seen. Olympus enhances the image quality by constructing the camera with a whopping 32MB of buffered memory. That lets you take about a shot a second, or 3.3fps up to five shots. In addition, there are 15 quality settings to shoot at, including five TIFF modes.

But that's just scratching the surface. The camera's 6.5mm-to-19.5mm lens (equivalent to a 32mm-to-96mm lens on a 35mm camera) has 3X optical and 2.5X digital zoom. There are manual and automatic focus and exposure options, manual white balance, three ISO settings, and a QuickTime mode to shoot 186-second movies at 15fps at 160 x 120 pixels or 46-second movies at 15fps at 320 x 240 pixels.

The C-3030 has a USB connection and records audio to images. It stores an impressive one-to-165 shots on the included 16MB SmartMedia card.

Shots we took with the C-3030 were simply outstanding. Images in all lighting conditions were clear and bright, with colors vivid and lifelike. Shots we took at default settings were

extremely good, but the images we took after making manual adjustments were superb.

Taking shots and accessing the C-3030's lengthy list of features isn't easy. Olympus provides a mode dial and jog button, but the menus take time to maneuver. Options are packed into a compact and attractive frame making this camera even more appealing.

Camedia E-100RS (Rapid Shot)

$1,200

The E-100RS' price will scare off some users, especially users just entering the world of digital photography. That's probably good, because many of its functions and options are ones many amateurs won't use. In addition, the camera's bulky professional-style design isn't conducive to slipping it into a coat pocket to take with you. But if you're not frightened away by the price and design, you should like what you find.

Olympus markets the E-100RS as being faster than any previous digital camera in its class, and it may be. It takes just seconds to power up, and its generous 9.5MB of buffered memory stores shots until they can be processed so you can continue shooting. The camera impressively takes 15fps, 7.5fps, 5fps, or 3fps at six quality settings up to various shot limits. Finally, there's a unique Pre-Capture mode that saves one-to-five shots in buffered memory before you fully press down the shutter button. We don't run a benchmark test for speed, but we can say the E-100RS is noticeably speedy between shots.

In addition to speed, the E-100RS has a bevy of attractive features. Most notable is the 10X all-glass zoom lens that has an Image Stabilized System to reduce camera shake. The 6.8mm-to-70mm (equal to a 35mm-to-380mm

lens on a 35mm camera) lens is enhanced by 2.7X digital zoom, four metering settings, and automatic and manual white balance options, including four preset manual white balance settings.

We expected the E-100RS to render good images, and we weren't disappointed. Images were as sharp as we've seen from a consumer model, and the colors were accurate and fully defined. We were pleasantly surprised at the ease with which we took our shots. There's a learning curve to overcome and preparation to tackle before you'll be comfortably shooting, but not as much as we feared.

The camera shoots at four resolutions, including a top resolution of 1,368 x 1,024 pixels. It records QuickTime movies at four settings, including up to 8 seconds at 15fps at 640 x 480 pixels and up to 16 seconds at 15fps at 160 x 120 pixels. An 8MB SmartMedia card is bundled, but the camera also has a slot so you can insert a CompactFlash Type I or II card to store images.

Final Word

Choosing a Smart Choice winner in a review of products from different manufacturers is usually tough. Picking a winner from a group of excellent models from the same manufacturer is nearly impossible. Any camera you opt for will depend on your skill level, how much money you're willing to spend, and how much you anticipate learning about and growing into your image taking. With those considerations, we'd spend our money on the C-2100 Ultra Zoom. Its price falls in the middle of this group, plus it has a stylish design, 10X optical zoom lens, and multiple shooting modes. In addition, it's reasonably easy to use and produces excellent images. In our eyes, those attributes make it *the* giant among giants. ∎

by Blaine Flamig

Desktop Systems

A Pretty Impressive Presario

Presario 7000T-1.5

$3,555
Compaq
(800) 888-5925
(281) 370-0670
http://www.compaq.com

Compaq offers its PC customers a choice of either Intel or AMD microprocessors. Compaq knows that even if you don't choose a P4 system, such as its Presario 7000T, its Athlon PCs may entice you to buy a Compaq.

The P4 processor is a little ahead of its time. It's expensive compared to AMD Athlons and Intel Pentium IIIs. Also, the P4's Rambus memory is still costlier than the common SDRAM (synchronous dynamic RAM) Athlons and PIIIs can use. This is especially true for PC800 RDRAM (Rambus dynamic RAM), which gives better performance than cheaper PC700 and PC600 varieties. Finally, until new software takes advantage of the P4's advanced capabilities, it'll run some applications more slowly *per clock cycle* than Athlons or PIIIs.

Despite all this, the Compaq Presario 7000T ($3,555 as configured) makes the best of the P4 with great performance. It packs a 1.5GHz P4 processor—the fastest currently available—with 256KB of on-die level 2 cache memory. The P4 communicates with 128MB of PC800 RDRAM via a phenomenal 400MHz system bus. All this music sits in a white mid-tower case with a ripple effect underlying its glossy, dark fascia. This motif carries over to the 7000T's keyboard, as well.

Compaq's 19-inch MV 940 monitor is crisp and bright. Meanwhile, gamers will experience tremors just reading about the NVIDIA GeForce 2 GTS Ultra card with 64MB of DDR (double-data-rate) SDRAM handling video duties.

You won't have to worry about filling up this Presario's cavernous 75GB Deskstar 75GXP hard drive for years. If you do, though, you can always archive 4.7GB at a time on the Matsushita LF-D210 2X DVD-RAM drive. This drive accepts most bare optical discs and also DVD-RAM cartridges with aplomb. Together with the LG Electronics CED-8120B 12X/4X/32X (write/rewrite/read speeds) CD-RW drive, you'll be well prepared for inexpensive file archiving and music CD creation.

The 7000T has a Creative Sound Blaster Live! Value PCI audio card. An integrated board would have made more sense; it would have freed up a PCI (Peripheral Component Interconnect) slot. Our test system came without speakers, but for $154, Compaq will add a five-piece set of Klipsch Pro-Media 2.1 THX-certified units with subwoofer.

With the 7000T's monstrous MadOnion 3DMark-2000 score of 8,782, we expected Unreal Tournament to be, well, unreal. We cranked the game to its maximum resolution of 1,280 x 1,024 pixels and 32-bit color depth. Next, we set every texture and detail level to its highest setting and enabled "weapon flash" for some added load on the GeForce 2 GTS Ultra. UT played smoothly with just a hiccup or two as the hard drive kept up with our massive data demands. Everything was beautiful, but the gameplay had a mere hint of detachment, which told us to drop some video effects. After about 20 minutes, the game slowed *way* down, to perhaps one screen update every three seconds. We suspect heat buildup, as the GeForce was butted up against the USB (Universal Serial Bus) card with no room to breathe. Gamers could move the USB card and do a bit of tweaking to fulfill this Presario's promise of unearthly 3-D gameplay.

The 7000T's keyboard has Internet hot keys, CD/DVD controls, and volume and mute buttons. Its three-button wheel mouse is comfortable and precise. The mid-tower case has an IEEE 1394 (FireWire) port and two USB ports under a front hatch, with serial, parallel, and two USB ports in back. The floppy diskette drive and 56Kbps (kilobits per second) modem are here, along with a 10/100-Mbps (megabits per second) Ethernet card for DSL (Digital Subscriber Line) or cable modem Internet access.

If you're upgrading, it's not hard to access the 7000T's two free 3.5-inch, one free 5.25-inch drive bays, or four (two free) RAM slots. If you're rich, you can install up to 1GB of RDRAM in pairs. Unfortunately, there's only one free PCI slot out of five.

While benchmarking the 7000T, we logged a BAPco SYSmark2000 rating of 165 and a Video2000 total score of 2,471. This Presario wastes most similar $2000+ PCs in 3-D performance and SYSmark scores and compares well in Video2000 ranking. The real surprise is how badly the 7000T beats the similarly configured IBM NetVista A60i. This Compaq has just one-third the warranty period, however, at one year. ∎

by Marty Sems

Conferencing Tool

Chart Your Ideas

Ever wish you could archive those brainstorming sessions in front of the flip chart on a PC? The mimio flipChart is designed to do exactly that. A small capture device connects to any flip chart pad and tracks the movement of the styluses, which are translated to the PC along with the marker color. From the PC, you can share the presentation over the Internet or archive it for future reference.

The heart of the system is the capture device and the styluses. The capture device tracks ultrasonic signals emitted from the styluses. The capture device clips easily to the cardboard back of the flip chart and connects to a PC using either a serial or USB (Universal Serial Bus) cable. The device includes hardware buttons that let you move forward or back through the flip chart in the included software.

The styluses accommodate felt tip pens typically used with flip charts. Open a battery-powered stylus and slide in a marker. The unit comes with red, green, blue, and black caps. Attach the color cap you want to use to the end of the stylus and the cap informs the software what color pen you're using.

The pen only transmits when you press down on the page. If you're in front of the capture device, capping the end of the marker has the same effect as

pressing down on the paper. You can also use the styluses to calibrate the capture device. Tap on the far end of the flip chart to calibrate the software to work with the size flip chart you're using.

Working with the styluses can be awkward. The unit comes with two styluses, but if you want to use a third color on your flip chart, you'll have to pause to load the marker in the appropriate stylus and put

the proper cap on top of the stylus. The process doesn't take long, but who wants to pause for even a few seconds if you're on the verge of a great idea? Two AAA batteries power the styluses, so if you lose power in the middle of your presentation, you'll have to pause to change batteries. ▪

by Chad Denton

mimio flipChart

$270
Virtual Ink
(877) 696-4646
(617) 623-8387
http://www.mimio.com

Pen-based OCR

Scanning The Web

The Cross :Convergence Pen is the product of a partnership between A.T. Cross and Digital:Convergence. If you haven't heard of Digital:Convergence, it makes the :CueCat barcode scanner that Radio Shack gives away. The :CueCat attaches to a PC and lets users visit Web sites by swiping the barcode that appears on almost every product from books to electronic devices.

Instead of wiring the device to a desktop PC, Cross built a barcode scanner into the tip of a pen. The pen stores up to 300 barcodes. A small receiver, known as the OptoLink, transfers the encoded Web address from the pen to a PC. Because the barcode reader is built into the pen, there's no

need to carry a separate device for reading barcodes.

As a pen, this unit is nice. It fits comfortably in your hand, writes well, and looks good. The transparent plastic exposes some of the internal circuitry, giving the pen a high-tech look. The scanner, however, takes work to perfect. We often had to scan a code several times before the pen read the barcode correctly. When it reads a barcode, a green light flashes on the pen.

If you scan a barcode that is not in Digital:Convergence's database, Digital :Convergence will ask you for more information about the product and ask you for a suggested Web site. The barcodes we scanned linked us to company home pages rather than

product home pages. This was disappointing because product pages can be more difficult to find.

The included :CRQ software had problems when we initially installed it. Our test machine had both Microsoft's ActiveSync 3.1 and Palm's HotSync installed (for synching PDAs with a desktop PC). The software prevented the :CRQ software from recognizing the Opto-Link. Once we disabled the synchronization applications, however, we had no problems. The software adds a panel to the bottom of your screen that organizes the links the scanner has collected into different categories. You can prevent the software from recording links in specific categories.

Although the ability to translate barcodes into Web addresses is interesting and the implementation is better than the :CueCat, we're not sure the unit's worth $89.99. ▪

by Chad Denton

Cross :Convergence

$89.99
A.T. Cross
(800) 868-0884
(401) 333-1200
http://www.cross.com

Audio Lovers' CD Burning Software

Great Apps For Making Your Own Music Mix CDs
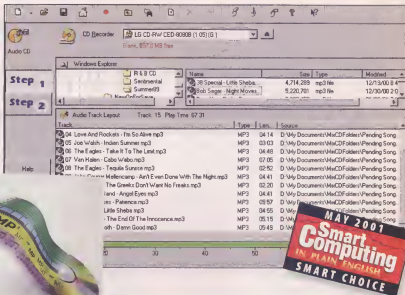
EVERY SO OFTEN, A TECH-NOLOGY COMES ALONG that makes people yearn for a new computer. Along with Year 2000 concerns and gaming, CD-RW (CD-rewriteable) drives have been a prime reason to buy a new PC in the last few years. This is partly due to their potential to **burn** (write) inexpensive audio CD-Rs (CD-recordables) that can play flawlessly in almost any CD player. Besides big RAM and hard drive space, though, users need a good piece of software to help them turn those musical mixes into CD reality.

No two CD-burning utilities have exactly the same features. However, all of the following applications can **rip** (extract) music tracks from CDs and burn them to CD-R. Without trying to downplay other important features, such as data archiving and packet-writing (drag-and-drop file transfers to CD-RW), we'll review each program from the music lover's perspective.

We tested all the units on a 600MHz Athlon Hewlett-Packard 9600. It has 128MB of PC100 SDRAM, an LG CED-8080B 8X/4X/32X CD-RW drive, and Windows 98 SE.

BUYING TIPS

1. If you have a newer CD-RW with Burn-Proof or other error-resilient technology, be sure the software you buy can take advantage of it.

2. If your CD-RW is an older model, check compatibility.

3. Don't forget to buy adhesive CD labels.

4. Sometimes it's best to wait on a brand-new software version until its biggest bugs are fixed.

5. See what else each application can do besides make audio CDs.

CD-Maker 2000
Professional Edition

$70 boxed version; $50 download
NTI
(714) 259-9700
http://www.ntius.com

NTI (Newtech Infosystems) sent us CD-Maker 2000 Professional Edition 4.2.67. Among other things, it's a forgiving audio CD creator that's pretty accessible to new users.

It's easy to rip tracks from CD to MP3 or WAV files in CD-Maker 2000. Once you've chosen the Audio CD option from the welcome screen, simply right-click one of the CD's tracks in the Explorer-like upper pane and choose Convert Audio Format. You can choose the track's name and destination folder, along with its sampling rate (quality setting) of up to 320Kbps (kilobits per second) if it's an MP3. CD-Maker 2000 can access the Gracenote (formerly CDDB) online database to automatically name tracks from many CDs. Note that CD-Maker 2000 doesn't support Microsoft's WMA (Windows Media Audio) format, which some users prefer for better sound quality than MP3 at a given sampling rate.

Burning CDs is as easy as ripping. Just drag audio tracks from the upper-right pane to the playlist pane below and click Step 2. CD-Maker 2000 has some default settings that actually decide what's best for the CD you're burning. For example, you can choose to record a CD using the track at once, disc at once, or session at once methods or let CD-Maker choose. Track at once burns audio tracks with more individual focus. It shuts the laser off between each track, leaving a two-second gap between each. It doesn't finalize the disc, meaning it leaves the disc open for a data session(s) afterward.

Disc at once records audio tracks one after another (no two-second gap), only shutting off the laser after the whole disc is burned rather than individual tracks. This method works in more CD players than TAO. Also, disc at once finalizes the CD, assuming there will be no data session appended to the music. Session at once writes the audio session without gaps in the same fashion as disc at once. However, it leaves the disc open to more sessions (doesn't finalize). Most if not all audio CD players can only play the first session on a CD, assuming it's audio. What's more, you can record live audio from your microphone or another source directly to CD.

CD-Maker seems to be more robust than the other utilities we tried. We had set it to test our CD burn before really doing it and to retry it at a slower speed if it encountered a buffer underrun error. In a buffer underrun, the computer doesn't supply data quickly enough to the CD-RW drive and the temporary storage cache runs empty, resulting in a flawed disc. Despite a conservative 4X burn speed, CD-Maker locked up during the test. The cool part is that once we pressed CTRL-ALT-DELETE and ended a task that wasn't responding, CD-Maker restarted the testing process at 2X speed. It then created a flawless CD.

CD-Maker can also verify that the data on your new CD matches the source files. It's compatible with new CD-RW drives with Burn-Proof or Just-Link technologies, which ostensibly eliminate buffer underruns. All this is great news for novices.

We do have a few criticisms. When you rip one song after another, CD-Maker 2000 will assume you want to save them as WAVs each time. Also, it will tell you how many minutes your proposed playlist totals, but it's up to you

to do the math on how many minutes would still be free on a 74- or 80-minute CD-R.

Meanwhile, the JewelCase Maker utility made it very difficult to put any graphics on an insert. It also claimed to support our ScanJet 4200C scanner through HP PrecisionScan LT, but it wouldn't actually accept an image from it. To top it off, we found no easy way to enter our new CD's track information short of typing it in by hand.

We recommend the $50 download of CD-Maker 2000 over the $70 boxed version. The 18-page quick start guide really isn't worth the $20 difference, especially if you back up your downloaded installation file to CD.
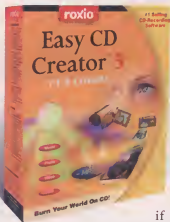
Easy CD Creator 5 Platinum

$99 ($50 upgrade for version 4 Deluxe users)
Roxio (a subsidiary of Adaptec)
(866) 280-7694
(408) 259-7694
http://www.roxio.com

We normally don't review beta (prerelease) software, but with Roxio's Easy CD Creator's popularity, we made an exception. Although you can use Easy CD Creator 5 Platinum ($99; $79 after rebate) to burn data CDs, photo and video CDs anyone can play on a PC, disaster recovery and backup discs, and CD-RWs, we'll stick to its music capabilities.

Roxio knew it could make a much simpler CD-burner for new users, but it didn't want to alienate current users of versions 3 and 4. The result is three separate programs for recording CDs. All three can access an online database for track names.

The newest music burner for MP3s, WMAs, and WAVs is called SoundStream 2. This simple, logical application is exactly what a novice needs to get burning or ripping right away. Simply add tracks from a CD, file, or your music library to a playlist and then burn the CD at the speed you want. You'll need to click Finalize after the CD finishes in order to play it later.

SoundStream has a 10-band equalizer and all sorts of other sound enhancement features for several types of audio files. In particular, the Spin Doctor utility makes moving LP record or cassette tracks to CD far less trying, with automatic track splitting, "pop" and noise reduction, and much more.

The other music-burning applications are Music CD Project for CD-audio discs and Music MP3 Project. The latter lets you put up to 99 MP3s on a CD for use in the few (but multiplying) players and car stereos that can play MP3s from such a disc. Both applications strongly resemble Easy CD Creator 4. One improvement is remaining time and space estimates for both 74- and 80-minute CD-Rs. Also, when you want to rip a track (up to 320Kbps MP3s and 128Kbps WMAs), an Explorer-like save window lets you choose the destination folder, file name, format, and quality setting. You can even adjust start and end points from the same window.

SoundStream has a 10-band equalizer and all sorts of other sound enhancement features for several types of audio files.

Unfortunately, in our beta (build 305), both Music CD Project and Music MP3 Project consistently locked up 3% into a burn session—just enough to toast a CD. This surprised our contact at Roxio, but she said there were still things to fix before the release. SoundStream worked fine, though.

Easy CD Creator 5 Platinum comes with an improved CD Label Creator. It's fairly flexible in allowing you to put text or your CD's contents on inserts or even on the CD label, but we had a hard time resizing a large number of song titles to fit the current background theme. Still, CD Label Creator lets you preview fonts before you use them and inserts before you print.

Easy CD Creator 5 Platinum is really more of a suite of awesome applications than a single software entity. And it is expensive, but because it has many features other than audio ones, you probably won't need any other software for your CD-RW.

Easy CD Creator 5 Platinum

is really more of a suite of awesome applications than a single software entity.

MusicMatch gives you an overwhelming level of control. For example, you can choose not only to use a hard drive cache, but also where it resides, how large the memory cache should be, and what priority it has in your system. After you've inspected the options in MusicMatch's many settings windows, actual burning is easy.

If you're serious about burning CDs, spring for the $20 Plus version ($50 for lifetime upgrades). Besides quicker ripping and much faster burning—up to 12X with the right drive and CD-R—MusicMatch Plus lets you make jewel case inserts, CD labels, and custom settings on a 10-band graphic equalizer. We would have liked more flexibility in the insert maker to type in our own text, however. Music-Match Plus also lets you print your Music Library list and even set your Desktop wallpaper to reflect any artwork in the MP3 currently playing.

MusicMatch is more difficult to use than Easy CD Creator or CD-Maker. Although those programs let you drag songs from your hard drive or CDs directly into a burnable playlist, MusicMatch makes you add songs to its Music Library first. Unless you've adjusted the way it categorizes songs there, you might have to search for the files there and *then* add them to your playlist. Also, MusicMatch by default names ripped tracks according to their ID tags. It also uses these instead of file names in its Music Library and Playlist, so you'll want to learn how to edit ID tags.

Another downside to MusicMatch version 6.00.0270 concerns errors we encountered on two different test systems. These included lockups and strange errors warning us to shut down nonexistent applications "outputting" audio. MusicMatch's tech support tried to help, but the Request Technical Support utility that was supposed to send them log files of our problems didn't work correctly either.

Smart Choice

All of these applications had pros and cons. MusicMatch, although the least expensive and most tweakable, frustrated us with its complicated file management and frequent errors. However, it's the most music-oriented program we tested, and its visual features are pretty cool.

CD-Maker 2000 was easier to use and more resilient. It also adds several CD-burning features beyond audio, but its lack of WMA support and goony jewel case insert software may turn away some buyers. Still, its $50 download price and "Smart Decision" settings help it net our Smart Choice award.

Easy CD Creator 5 Platinum has some amazingly easy-to-use features and a comprehensive suite of burning applications. Although we can overlook this beta version's critical burning errors, trusting that they will be ironed out before release, its $99 price tag stuns us. If price is no object, you don't mind waiting for a rebate, or if you already have version 4 Deluxe, Easy CD Creator 5 is the one to get. ▐

by Marty Sems

MusicMatch Jukebox 6.0

free; $20 Plus version
MusicMatch
(858) 385-8360
http://www.musicmatch.com

This free music jukebox is all the software you will need to play most discrete and streaming music formats, rip tracks, organize your song collection, and burn mix CDs. However, it is harder to learn and use than the others.

MusicMatch 6.0 lets you tailor custom streaming radio stations over the Internet, play CDs, and convert files among MP3s, WAVs, and WMAs (although not from WMA to other formats). You can edit your MP3s' ID3V1 or ID3V2 tags (inaudible, embedded data files) with each song's title, artist, lyrics, notes, and even BMP or JPEG artwork.

`Utility`

Keep Your PC Happy

There are lots of utilities to maximize your computer's performance and protect against viruses; however, few, if any, have the number of practical, easy-to-use maintenance tools that you'll find in Symantec's System-Works 2001. This powerful suite includes Norton Utilities 2001, Norton CleanSweep 2001, and Norton AntiVirus 2001.

This latest version of Symantec's popular utility package works with Windows 95/98/Me /NT 4.0/2000. There's a handy One Button Checkup feature that scans for and fixes problems with the Registry, files, shortcuts, and other data on your system. The AntiVirus program's automatic LiveUpdate feature checks for and downloads new virus definitions for you while you're online, and the emergency boot files on the CD-ROM let you boot your system and provide antivirus defenses in a virus emergency. The program even automatically configures with and scans popular POP3 (Post Office Protocol, version 3) e-mail accounts, such as Microsoft Outlook and Eudora Pro, for viruses hiding in incoming attachments. The program then stops the offending attachment from downloading to your hard drive and possibly infecting your computer.

Some system utilities can be confusing, especially for beginners, but the SystemWorks interface is simple to navigate. Click the Begin Scan button in the lower right corner of the main window to launch the One Button Checkup or choose one of the program buttons in the window's left side for a menu of tools. There's also a Symantec Web button with options for accessing online computer maintenance services. Once you click a program's category, you'll see a list of tools and descriptions of each in the right part of the main window. Select a tool and SystemWorks walks you through the option's procedures, prompting you to let the tool automatically fix any problems, if necessary. It's that easy.

The bulk of the suite's features lie within the Norton Utilities program, which contains tools for locating and fixing data errors, finding and resolving hardware configuration conflicts, and much more. Norton System Doctor, for example, monitors your system in the background and notifies you of system problems as they arise, and the Norton WinDoctor checks and automatically fixes problems in Windows System, Registry, and Program files.
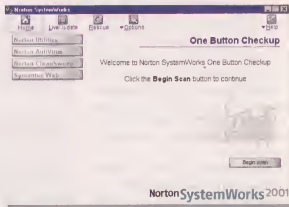
You can also use the UnErase Wizard, located under Find And Fix Problems, to restore files that you've sent to the Recycle Bin since installing SystemWorks. Access this convenient option through the main window or by right-clicking your Windows Recycle Bin and selecting Norton UnErase from the drop-down menu. Once you launch the wizard, select the files you want to restore, and click the Recover button.

Aside from the Norton Utilities' tools, System-Works has some very nice options for cleaning data clutter from a system's hard drive and directories. Open the Norton CleanSweep program for a list of tools that let you remove unneeded files from your hard drive, uninstall programs downloaded from the Internet, and remove browser plug-ins that you no longer need. You can even search for and delete duplicate and orphaned files left behind from previous uninstall sessions, as well as files that you haven't used in a long time.

With most sweeps, you can back up and compress the data. This can prevent major headaches down the road if you discover that you deleted a file you shouldn't have. To restore deleted data, click CleanSweep's CleanUp category and choose Restore Wizard.

The final component of SystemWorks is the widely used Norton AntiVirus 2001 program. This application works mostly in the background, but you can still click the Norton AntiVirus button on the SystemWorks main page for options that will let you manually launch virus scans of your computer, schedule future scans, and get reports of virus activity on your system.

In case you can't tell by now, we're pretty impressed with the SystemWorks 2001 suite. It's a set of user-friendly programs that work together to take the guesswork out of keeping your PC healthy. The suite is also affordable; you would spend about $120 to purchase all three programs separately, so the $60 price tag for SystemWorks is very reasonable. If maintaining a healthy PC is important to you, you owe it to yourself to check this suite out. ▪

by Lori Robison

Block Online Intruders

Zero Knowledge Systems creates software to help protect consumers' online privacy. Its new Freedom 2.0 In-ternet Privacy Suite provides several free tools to help protect your online identity. The software uses nyms (pseudonyms) to create multiple identities. These nyms, used in conjunction with several privacy tools, help you protect your true identity when you're online.

These privacy tools include a personal firewall, which we tested at Shields-UP! (http://www.grc.com) and DSL Reports (http://www.dslreports.com). Neither test turned up vulnerabilities once we closed the ident port and configured the firewall not to respond to pings. The ident port, or channel, occasionally provides authentication information to remote servers. Potential intruders can use information from the ident port to compromise your system. A ping is a request for a response from a remote computer. If your system doesn't respond to requests, it's harder for intruders to find your system.

Configure the firewall to let certain applications access the Internet and others function as servers. This makes the firewall compatible with applications such as Gnutella and ICQ.

The software also features other privacy tools. Cookie Manager lets you view and delete cookies associated with each nym, and Ad Block can eliminate most online ads. Keyword Alert can monitor outgoing text for personal information, such as your real name, phone number, or credit card information.
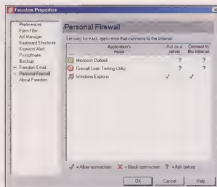
The Freedom suite is incompatible with some software, including McAfee Personal Firewall, Microsoft Front Page with Personal Webserver, and Microsoft's Internet Connection Sharing software. It's also incompatible with AOL, Compuserve 2000, and DirecPC.

Overall, this is probably one of the most complete, free packages you can find. You can upgrade to the Premium Service for $49.95 a year and use most Internet services, including e-mail and the Web, anonymously. ▌

by Chad Denton

The Power Of The PC Press

The Print Shop Pro Publisher Deluxe 11 is a versatile package of software that can fill the publishing needs of home office users and consumers alike. The retail package includes a generous collection of software, including the main The Print Shop Pro Publisher Deluxe 11 program, Print Shop Photo Pro 2.0, and Print Shop Multimedia Organizer. That's a lot of software for only $99.95. The whole set comes on nine CDs, six of which contain various kinds of artwork for your projects.

The Print Shop Pro Publisher Deluxe 11 is designed around the concept of projects, and there are plenty of them. You can quickly and easily create greeting cards, business cards, Web pages, stationery, announcements, and fliers. Some projects have a decidedly business slant, while others are definitely for the home.

Choosing and making the desired project is a snap thanks to The Print Shop Pro Publisher Deluxe 11's smooth interface. You can choose a project, such as business cards, with a couple of mouse clicks. From there, you can create your own card or use the project wizard. The project wizard has templates for just about everything, so all you have to do is fill in the text blanks with your own words and print. We love how easy it is to use this program.

The other programs are useful too. The Print Shop Photo Pro 2.0 software is a solid image editor. You can use it to import photos, touch them up, and then use them in photo projects, such as calendars. The Print Shop Multimedia Organizer is also pretty cool. It'll help you organize your digital images, but you also can use it to create a slideshow, easily send multimedia files to friends, or create a multimedia presentation.

The Print Shop Pro Publisher Deluxe 11 is a big program with a relatively small price tag. The fun, practical, and simple projects will benefit home office and consumer users alike. ▌

by Michael Sweet

Congratulations!

The Olympus P-400 Dye-Sublimation Photo Printer has arrived!

The Olympus P-400 uses **dye-sublimation technology** to produce **true continuous-tone images**, just like traditional photographs. Inkjet printers, on the other hand, can only create the *illusion* of continuous tones by using a matrix of dots. That's why **even the best inkjet printer is no match for the P-400** when it comes to image detail and color vibrancy.

Unlike typical inkjet printers, the P-400 delivers **fade-resistant images with archival qualities** comparable to traditional photographs. And while inkjet printers will test your patience, the P-400 **can output an 8" x 10" print[1] in about 90 seconds.**[2]

It's a 26-pound Digital Darkroom.
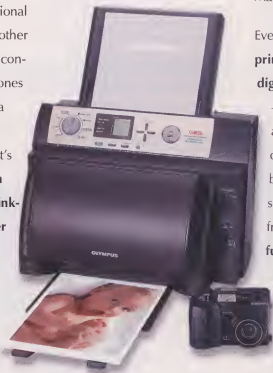
Olympus P-400 Dye-Sublimation Photo Printer

CAMEDIA

Digitally Inspired

You won't find a more **versatile**, more **convenient** printer than the Olympus P-400. Its **parallel and USB interfaces** let you print from your favorite PC or Mac photoediting application.

Even without a computer, you can **print images directly from your digital camera's removable media** —including SmartMedia,™ Type I and II CompactFlash,® and Memory Stick®—thanks to the P-400's built-in SmartMedia and PC Card slots. Print on the spot, choosing from **numerous built-in print functions**—such as sepia-tone or black-and-white conversion, crop and enlarge, borders and vignettes.

Finally, you should know the Olympus P-400 can be yours for **under $1,000**[3]—about one-fifth the cost of competitive dye-sublimation printers of comparable output size. You can learn more at **P400.olympus.com**.

System File Checker Saves Time

Utility Finds & Restores Deleted Or Lost Data

If your computer freezes, an application won't launch, or features within programs won't work, the problem may be that the data in some of your Windows 98 system or application folders and files are corrupt or missing. Locating and replacing or restoring this data yourself by manually searching the original file on a software installation diskette or CD-ROM can be time-consuming and frustrating. That's where the Windows 98 System File Checker can help.

This easy-to-use utility scans .DLL (Dynamic Link Library), .EXE (executable), .SYS (system), and other files on your hard drive and restores the data from installation diskettes and CD-ROMs. File checker will also back up your existing data to a file on your hard drive before restoring original files. The System File Checker will extract specific compressed files from installation diskettes and CD-ROMs, create logs of replaced and altered files, and customize scans based on folder names and file extensions.

To access the System File Checker, click the Start button, Programs, Accessories, System Tools, and System Information. In the Microsoft System Information window, click the Tools menu and System File Checker. You can also directly access System File Checker from Run on the Start menu: click Run, type SFC in the Open field, and press ENTER.

Next, insert the installation diskette or CD-ROM into the appropriate drive. Click either the Scan For Altered Files or the Extract One File From Installation Disk radio button in the System File Checker dialog box. For the latter, enter the name of the file into the field or click the Browse button to locate the file. Now, click Start to bring up the
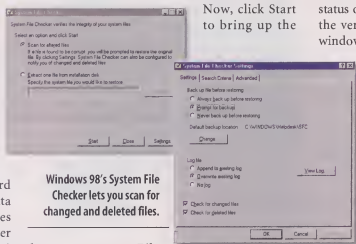
Windows 98's System File Checker lets you scan for changed and deleted files.

Extract File dialog box. Enter the name and location of the source directory in the Restore From field and the destination folder in the Save File In field. Click OK to restore your file to your computer.

Alterations

The utility also scans for altered files—just click the radio button and click Start. You can also customize your scan. Click the Settings button and then the Settings tab for the following options: Always Backup Before Restoring, Prompt Before Backup, and Never Backup Before Restoring. You can even generate a log after the scan listing the folders and files that the System File Checker scan updated, restored, removed from, and added to your system. Click the Search Criteria tab for options that let you add or remove folders and files for a given scan.

Under the Advanced tab in the System File Checker Settings window, you'll see the name of the tool's verification data file, Default.sfc, stored in the C:\WINDOWS directory. The utility uses this file, which contains a list of file names, sizes, versions, and other data, to compare with the status of existing files on your computer.

If, during a scan, the System File Checker detects differences between the status of the existing file and status of the original file as outlined in the verification data file, you'll see a window listing the file name, version number, location on your hard drive, and other data. Below, you'll see a list of options. You can keep the changed file as is and add its size, version, and other data to the verification data file; automatically restore the file from your installation diskette or CD-ROM to the proper folder; or ignore the alert entirely. Click OK once you've made your choice to continue the scan.

Once the System File Checker is finished, you can view the scan log by clicking the Settings button in the main window, selecting the Settings tab, and clicking the View Log button.

We suggest you use the System File Checker to perform scans of your system and application files each time you install or update software or device drivers. In this way, you can prevent system and application problems by maintaining the integrity of important files and ensure that your computer continues to operate as it should. ∎

by Lori Robison

Sign Me Digitally

Digital Signatures Mean 'No' Or 'Go'

"**H**ey baby, what's your sign?" That's not the first thing you would expect to hear from a computer, but with Microsoft's Windows Me, yours will definitely be asking. That's because every time you attempt to add a snazzy new piece of hardware, WinMe verifies that the device's accompanying driver is digitally signed. A digital signature is Microsoft's stamp of approval for a manufacturer's driver, a driver receives one only if it meets the MHQL (Microsoft Hardware Quality Labs) requirements for safe compatibility. This is called code signing, more commonly known as driver signing.

Out With The Old

Microsoft began digitally signing drivers in 1998, but Windows 98 did not alert users if they installed an uncertified driver. Thus, it was still possible to install incompatible or outdated drivers that could cause problems with the operating system.

WinMe, on the other hand, includes a few safeguards to keep your computer running smoothly. When you install new hardware or attempt to add a driver, WinMe checks to make sure the driver's digital signature is present and intact. If the driver is outdated or uncertified or if it has been modified since MHQL's certification, WinMe prompts you with the option to halt the installation of the driver.

WinMe always installs the most compatible driver for a particular device, even if the driver is not signed. However, given two equal drivers, WinMe will select the signed driver over an unsigned one. If a signed driver is not available, WinMe lets you install an unsigned driver until you locate one that is approved. This is useful when

you need to use crucial hardware; however, you run the risks associated with uncertified drivers: unsatisfactory system performance due to software conflicts and possible device failure.

There are three alert settings for the signature verification feature: Ignore, Warn, and Block. Ignore lets you install unsigned drivers without notifi-

The File Verification tool finds a list of unsigned files to help you pinpoint potential driver problems.

cation. Warn alerts you to unsigned drivers but still lets you add the drivers at your discretion. Block means just that—WinMe will not let you install any unsigned drivers.

The default alert setting differs depending upon the hardware class. WinMe's factory setting blocks you from using unsigned drivers for video and audio devices because this is where most driver conflicts arise. The default setting for other device classes is Ignore, which lets you add unsigned drivers for other hardware devices without interruption.

If you want to install an unsigned driver for a protected device, click Advanced when the Warning dialog box appears during installation. Then you can tweak the settings to match your preference.

Check Your Older Files, Too

WinMe can also verify files already on your computer using the File Verification Tool. To run this utility, click the Start button and click Run. In the Run dialog box, type **sigverif** and click OK.

In the File Signature Verification dialog box, click Start to test your system files. You'll see the list of files that are not digitally signed. Under the File Types heading, browse for device driver files, which you'll want to note for future reference.

When you're finished perusing the list, click Close. If you want to customize the search parameters and scan other files types, click Advanced. Click Look For Other Files That Are Not Digitally Signed and make desired changes using the Scan This File Type option. Also, with the Look In This Folder option, you can point to the folder you want scanned; the default search checks only the WINDOWS folder.

Now click the Logging tab. To see a listing of unsigned drivers, click View Log. Unless you clear the checkbox, WinMe records the results of every search. You can alter the way your search results are recorded by clicking one of two Logging options: Append or Overwrite. Once you've made any changes, click OK and Start to try the refined search.

Remember, even if the verification tool finds unsigned drivers, your computer may work fine. Just to be sure, though, you may want to switch to a certified driver. The most convenient place to look for updated drivers is on the manufacturer's Web site. Most have download links for device drivers and other software. If the newest version of the driver is still uncertified, it could still be OK. Some hardware manufacturers simply opt not to have drivers tested by Microsoft. ▮

by Nathan Chandler

Port Authority

How To Add USB Ports To Your System

CHANCES ARE THAT WHEN YOU BOUGHT YOUR COM-PUTER, it came with a mouse and a keyboard and not much else. That changes quickly, of course. Most PC users also buy printers, and scanners have become popular in recent years. Gamers need at least one joystick or gamepad, if not both. Soon your computer desk is crowded with gadgets, and your system may not have enough ports to accommodate all of them. Unless, that is, your PC has a USB (Universal Serial Bus) port.

A USB-enabled computer can support up to 127 USB devices (in theory, anyway), which should be more than enough for anyone. All kinds of external peripherals come in USB flavors, including digital cameras, scanners, printers, external storage devices, keyboards, mice, and joysticks. We'll show you how to add USB to your computer if you don't have it, as well as how to add extra USB ports to systems that currently have USB ports installed.

USB 101

USB is a hardware interface similar to the serial and parallel port interfaces your PC already has, but it is much faster than either variety. USB can transfer a maximum of 12Mbps (megabits per second) of data, whereas a standard parallel port can transfer about 115KBps (kilobytes per second), which is equal to about 92Kbps (kilobits per second) or slightly less than 1Mbps. EPP (Enhanced Parallel Port) ports are considerably faster at 12Mbps, but are far less common than USB devices. Serial ports are even slower than standard parallel ports, transferring a mere 115Kbps.

Perhaps USB's greatest advantage over parallel and serial connections is the ease with which you can connect USB peripherals to your PC. A typical installation goes something like this:
1. Remove USB peripheral from packaging
2. Plug device into USB port in back of computer
3. Drink a soda.

The third step is probably optional, but there's really nothing more to installing a USB device than that. The computer knows when you've plugged a USB device into your computer in the same way your dog knows you're taking it to the vet instead of the park: it senses it. The OS (operating system) detects the new USB device and automatically installs the driver software for it in most cases. You don't have to mess with IRQ (interrupt request line) settings or other niggling configuration details that used to give computer users fits before USB appeared. Your USB device may come with additional software or advanced drivers that you should install, but these are usually just extras. Occasionally, Windows won't have drivers for your USB device, and you will have to install the software included with your USB product manually. Windows will guide you through each step of this simple process.

Do You Have What It Takes?

Your PC will have to meet certain hardware and OS requirements if you are to add USB ports to it. Keith Renty, corporate education manager for Belkin, says that both Belkin and Microsoft recommend Windows 98 as the minimum OS with which to use USB. Windows 95B does, technically, support USB, but Renty says that support for USB in Win95B is "so-so at best".

The minimum system requirements necessary to run Win98 on a PC include at least a 486DX 66MHz CPU, 16MB of RAM, and 225MB of hard drive space. To get the most from Win98, however, we recommend a PC with at least a Pentium processor, 32MB or more of RAM, and 500MB or more of hard drive space. If your system is good enough to run Win98, it's good enough to use USB. You can also use USB on your PC if you run Windows 98 Second Edition, Windows Me, or Windows 2000 OSes. Windows NT 4.0 does not support USB.

We should point out that the above system requirements apply to the older version of USB, which is USB 1.1, and that USB 2.0 products are just around the corner. In fact, they may be appearing in a store near you by the time you read this. The most significant difference between USB 1.1 and USB 2.0 is the data transfer rate. USB 2.0 can transfer data at a maximum of 480Mbps, which is of course many times faster than USB 1.1's 12Mbps. Another important difference between the two is OS compatibility. Renty says that, at least initially, USB 2.0 will only work with the Win2000 OS. At some point WinMe may also support USB 2.0, but right now it's Win2000 or nothing.

If you decide to upgrade to Win2000 and USB 2.0, don't throw your old USB 1.1 peripherals away. They will work with USB 2.0 ports. Likewise, you can use a USB 2.0 device with a USB 1.1 port, but the device will be limited to USB 1.1's maximum data transfer rate. If you are a Win2000 user, you can get around this problem by installing a USB 2.0 add-in card (called a controller) in your PC. USB controllers typically contain two USB ports, but they may have more. "You can have a USB 1.1 controller and a USB 2.0 controller in the computer and they will act independently," Renty says.

The process of adding a USB 2.0 controller to your computer is the same as adding a USB 1.1 controller to an older PC. The controllers for both USB 1.1 and 2.0 are PCI (Peripheral Component Interconnect) cards, so all you have to do is pop them into an open PCI slot in your computer's motherboard.

The Installation

It's easy to add a USB controller to your PC. First, shut it down along with any devices attached to it, such as a printer or scanner. Next, remove its cover. Ground yourself by touching the metal frame of the computer's case and find an open PCI slot, which will be cream-colored. There will be a metal tab covering a rectangular opening to the rear of the PC that aligns with this slot. This is where the USB ports will poke through when you install the controller. Remove the tab and save the screw. Firmly (but not *too* firmly) press the controller into the PCI slot until it snugly pops into place. Replace the screw to secure the card, then replace the computer's cover and turn on your computer. Your computer should detect the new hardware and install the drivers for you. Once that's done, your computer is USB-ready.

Now your computer is equipped with two whole USB ports, but two is rarely enough. One USB mouse and keyboard later, you're out of ports. You can add more USB ports to your computer by adding external USB hubs, which in most cases have four USB ports each. Installing a USB hub is even easier than installing a controller. Just plug the hub into an open USB port; your computer should detect it and set it up automatically.

Renty says there are three types of USB hubs: bus powered, self-powered, and hubs that can be set up as either bus or self-powered. Bus powered hubs draw their power directly from your computer through the hub's USB cable and are used for low-speed devices such as keyboards, joysticks, and mice. Self-powered hubs have an AC adapter and are necessary for more powerful USB devices like scanners. Make sure you use the right kind of hub for the peripherals you connect to it.

USB's flexibility and ease of use make it one of the best technologies ever developed for PCs. If your system doesn't have it, it's time to upgrade. ∎

by Michael Sweet

USB vs. SCSI

Some people debate the merits of USB (Universal Serial Bus) vs. SCSI (Small Computer System Interface), but it's important to understand that each technology has its strengths and weaknesses. SCSI is faster than USB 1.1, with some versions of SCSI reaching data transfer rates of 80MBps (that's megabytes, not megabits) compared to USB 1.1's tortoise-like 12Mbps. This makes SCSI an ideal interface for devices that require a lot of speed, such as hard drives and optical drives. Another advantage of SCSI is that you can use it for internal or external devices, whereas USB is used for external peripherals.

SCSI has some drawbacks, though. You can only connect a maximum of 15 devices to a SCSI bus (and in many cases only seven, depending upon which version of SCSI you're using), whereas USB can use up to 127 devices. Furthermore, there is a wider variety of available USB devices than of SCSI (when was the last time you saw a SCSI mouse?). SCSI also has a compatibility problem. There are several versions of SCSI, such as SCSI-2, Fast SCSI, Wide SCSI, SCSI-3, and so on. The various incarnations of SCSI are not always compatible with each other, but any USB devices will work with any USB-enabled computer.

Then there are the setup issues. When setting up a USB device, you only need the mental capacity necessary to insert plug A into slot B, which most of us can handle. Installing a SCSI device requires some extra steps like terminating the last device in the SCSI bus.

Finally, the vast majority of computers made today already have two USB ports installed, whereas most computers do not come with SCSI host adapters installed. You can't use SCSI devices without a host adapter, so you'll have to buy one and install it before you can use a SCSI device. Buying a host adapter increases the cost of using SCSI devices, which can be considerably more expensive than their USB counterparts to begin with. ∎

Excite.com Serves You The Web

Your Personal Portal To News, Information & Entertainment
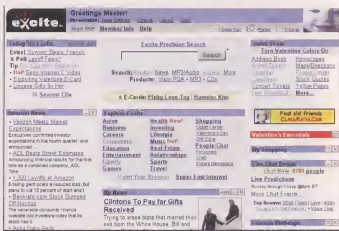
The Excite Web portal is filled with current information, much of it customizable.

It's 2001. Have you picked your Web portal yet? You may be asking, "What's a Web portal?" A portal is a consumer-oriented Web site designed to be your (and everyone's) home page. It's your browser's default address. It's where you get your news, your mail, and your shopping fix and where your Web searches begin. The original and most famous Web portal is Yahoo!, but others are gaining popularity. In December 2000, Internet traffic measurement firm Media Metrix ranked Excite as the No. 4 digital media property, right behind, AOL, Yahoo!, and Microsoft.

We'll walk you through the Excite Web portal and its many fine features. Excite Networks had more than 30 million unique visitors in December 2000. It's not hard to see why. Excite's portal alone provides its devotees a satisfying array of services that are well conceived and easy to use. The e-mail service includes contact management features, the news is varied and customizable, and the chat communities are active and now even include voice capability.

Registration

To take full advantage of Excite, of course you must register. We were pleased to find the site requires minimal information for membership. Besides your name, you must provide your address, age, and gender. Excite promises not to divulge personal information to third parties, although it may provide anonymous demographic profiles to outside companies. Excite's privacy policy declares the company uses the information you provide to target ads and customize your Web

TIPS ... For Using Excite

To change the graphic in the upper right of the screen, click it or the nearby link that says Change Photo. Choose from a selection of stock photographs. Pick a landscape, a funny face, or famous landmark by clicking a radio button. Then click Submit.

Click Photos, Photo Search, and Upload Your Own Photos to retrieve an image from your hard drive. Unfortunately, the area for pictures is only 86 pixels

wide and 57 pixels high. If you choose an image larger than 86 x 57 pixels, it will appear distorted on the Excite desktop.

Use the Page Settings wizard to choose chunks of information (called modules) and arrange them on your desktop. Click Select Content. To select a new module, just click one. It will appear in your list of page contents. To remove a module from your page, highlight the selection and click Remove.

There is so much good content to choose from, it's easy to fill your page. We especially like the customized options, like regional weather and local events. We like checking current temperatures and our local baseball team's schedule.

Some modules are editable. Especially nice is editing My News. Add and remove sections (Entertainment, Top Stories), choose how many headlines you'd like included, and specify how many days

worth of headlines you'd like. Just click the Edit button.

One thing we like about getting news online: it changes frequently. Your Excite page refreshes, or redraws information, every 10 minutes by default; every 10 minutes you get the latest news from the wire. If you find the intermittent page redraws bothersome, go to Page Settings and lengthen, or remove, the page refreshing feature.

pages. (Think local weather and horoscope.) If you want to limit advertisements from Excite or affiliates, uncheck those options when registering.

The portal desktop. You can customize many aspects of your Excite start page. Add a greeting and a personal photo. You can select, rearrange, and edit content. Most of Excite's content categories (called modules) are multifaceted. For example, if you like business information, you can choose among many subcategories, such as Business Home, Industries, Business News, Tools, and Business Search. Among those categories, you'll find the top business headlines, including highlights from WSJ.com. You can get twenty-minute delayed Stock Quotes and access an editable Stock Portfolio. Take advantage of the Business Guide, which is a directory of Web resources specifically targeting business users, or use the Business Tools, which give templates so you can create expense reports, invoices, and purchase orders. If you want more from a particular category, try clicking More Content.

Changing the layout is a drag-and-drop procedure. You can shuffle most categories around the page, although Excite's top services remain in fixed positions at the top. Excite's online interface for customization feels fast and solid, even on our 56Kbps (kilobits per second) modem connection. We like that. Changes take place immediately. Our biggest complaint about the Excite desktop layout is that it's too wide. We had to enlarge our window to see the content on the right.

Control E-mail & Your Life

Your new login name becomes your Excite.com e-mail address. You can sign up for free newsletters and special offers, receive faxes, get a free Web
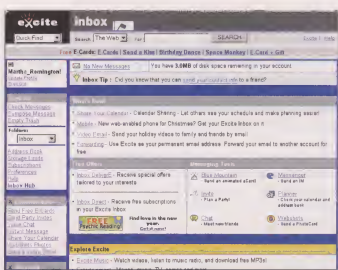
Customize your portal page from the Page Settings link. Make your changes with a simple, wizard-based interface.

voicemail account, and forward your Excite mail to another address. If you don't use your Excite e-mail more than once in 90 days, however, Excite puts your account on hold.

The accompanying address book is actually part of the Excite Planner, an online software tool for managing contact information, as well as keeping a full-featured calendar, a to-do list, and a notepad. You can import contact data into your Excite Planner, and you can synch it up with popular handheld devices and software organizers. If you are dedicated to online scheduling, you can share your Excite calendar with co-workers, friends, and family members on the Web—with options to screen users and events.

Many Web portals have difficulty seamlessly coordinating the various services they offer, and this design problem is somewhat in evidence at Excite. For example, when you click to get your e-mail, you're transported to (and logged into) a parallel universe. Much looks the same, but from here it is not clear how you return to the

main screen. We crossed our fingers and clicked Sign Out, hoping this would not close Excite altogether. Happily, we discovered that Excite only logs out users from its e-mail service. A Return To Excite link returned us to our portal desktop.

Chat. Excite's chats are what you might expect: rooms of people joking, spouting off, and flirting. The rooms have Chat Hosts who moderate discussions, encourage talk, and help new users. At any given time there are thousands of people chatting on Excite, participating in one of the hundreds of topical chat rooms. (Chat aficionados will find Excite's 5 Username feature a bonus. Keep your login name for e-mail, but become "SluggerTom" in sports chat.)

Voice chat is a relatively new feature at Excite. At this point, all users are

We like Excite's e-mail service and accompanying task management tools. The planner keeps your schedule on the Web for you and others to access.

required to download an extra piece of software and open it separately. It's interesting, but rather crude. We still prefer the text-based chat.

Excite also offers the Excite Messenger, an imitation of AOL's Instant Messaging service. Its real-time chat feature is limited to buddies who are members of Excite, but you can scroll

EXCITE Fact Sheet

The company began in February 1993, when the six founders—Stanford University grads Mark Van Haren, Ryan McIntyre, Ben Lutch, Joe Kraus, Graham Spencer, and Martin Reinfried—gathered in Rosita's, a taqueria in Redwood City, Calif. They knew they didn't want to work for a big company; they wanted to do something entrepreneurial together.

As the five programmers and one political science major consumed burritos, the idea dawned: create a software tool for managing the vast amount of information available on the Internet. That idea ultimately led to Architect Software, later incorporated into Excite.

The group set off for the Stanford University library to research techniques for information search and retrieval. While they held down day jobs, the programmers agreed upon a plan and tapped away at

their Sun workstations. The political science major, Joe Kraus, cut off several inches of hair and became "Phone Boy." The group's Internet software product combined search-and-retrieval with automatic hypertext linking, subject-grouping, and automatic abstracting—the Excite Search still in use today. Armed with this new Internet tool, Phone Boy began making calls up and down Redwood City's Sand Hill Road, ground zero for West Coast venture capital firms.

In December 1994, financiers warmed up to the group's idea. Its first chief supporter was Vinod Khosla, who immediately bought them a badly needed $4,000 hard drive.

Infused with cash, less than a year later Architect launched http://www.excite.com in October 1995. The company signed distribution agreements with big names Microsoft Network and Netscape and officially changed its name

to Excite. When Excite went public in April 1996, the IPO was 2 million shares at $17 per share. The company had grown to 65 employees.

In 1997, the company moved to a new 88,000 square foot facility in Redwood City, just down the street from Rosita's. In 1997 it also released Excite 3.0 (initially code-named Purple Haze), had about 200 employees, and the Odwalla soft drink intake was 2,000 bottles per month.

In May 1999, Excite, now a leading portal and search engine, merged with @Home, a provider of high-speed Internet access via cable lines. Today, Excite@Home, has established itself as the leader in broadband, paving the way for broadband deployment while offering a complete "always-on" Internet service worldwide. Today Excite@Home claims 93 million subscribers to Excite.com and 149 million page-views per day. ▌▌

Internet Connections

An examination of Excite would be incomplete without mentioning some of the Internet services its parent company Excite@Home provides.

High-speed service. The @Home Web Access service is a nationwide ISP (Internet service provider) that delivers broadband connections over cable modem. Keep in mind, broadband connections are not available everywhere. Excite@Home prices range from $35 to $55 per month, including cable modem. Installation fees range between $100 and $200.

Freebie dialups. For an Internet connection on the cheap, take a look at FreeLane, a dial-up service that gives users 25 hours of free Web surfing per month. In exchange, customers must click through some advertising. To use FreeLane you must download and install the FreeLane software. First check to make sure there is a local access number in your area.

Some people may miss a Web site creation page at Excite. Unlike other portal communities, Excite simply doesn't provide this feature. Since we already have a Web site elsewhere, we don't miss it. Others may, however.

Making It Your Own

At its most basic, the Excite Web portal provides an easily customizable interface for news, entertainment, and communication services. Depending on your day, you can pore over headlines, check your schedule, e-mail friends, and buy concert tickets. At that point, maybe it's time for another cup of coffee.

We like all the information Excite makes available, and we appreciate being able to customize it. If you like Excite enough to adopt it as your Web portal, it's easy to do. Just scroll to the bottom of the screen and click Make This My Start Page. That's what we did. After all, it's 2001. ▌▌

through long lists of people waiting to hear from you.

Integral Features

The Excite Web portal has four integral modules firmly planted in the prime space at the top of the page. Today On Excite offers links of current interests, such as television ratings, quickie polls, seasonal information, and shopping. Explore Excite is a directory with about 20 topic listings. Although the listings contain valuable information, there are lots of ads, and all content originates from Excite or its affiliate partners. Quick Tools provides a list of

task-specific links. We frequent the Classifieds section, which we've tailored to our local area. But you can look into the Airline Tickets (powered by Travelocity), Concert Tickets (powered by tickets.com), or Maps & Directions (powered by MapBlast).

Finally, there is Precision Search, which experienced Web surfers will find disappointing. For example, the photo search culls images that seem intended for desktop backgrounds and screensavers only. And separate searches for news, products, and music seem superfluous. In short, we were left with the plain old Web search. It's a good resource, but not a compelling feature.

by Marti LaChance

Web Tips

Ideas That Make The Most Of Online Time

🖱 Elderhostel

Combining the best aspects of European youth hostels and folk schools, Elderhostel (http://www.elderhostel.org) provides travel opportunities that are both inexpensive and educational for older travelers. If you're 55 or older, you can take advantage of the national and international opportunities. If you have a catalog and know what program you're interested in registering for, you can sign up online at http://www.elderhostel.org /REG/default.asp. You may, for instance, want to visit Minnesota in the summer and take a 7-day coach tour of the north shore of Lake Superior. You'll spend evenings in Duluth (Canal Park area), Grand Marais (on the lake), and Grand Portage, while learning about the history of the region.

🖱 Palatable Daily History

The Library of Congress' American Memory page (http://lcweb2.loc.gov /ammem/ammemhome .html) is an archive of American history that includes videos, books, online articles, and more. One of our favorite links is Today In History. The Web is replete with sites that summarize what happened on this day in history, but this is the most comprehensive example we've seen. For instance, let's take a look at February 22 (you can look up any day of the year), the day George Washington was born in 1732. The page features excerpts of letters, transcripts of speeches, photographs, links to more information, and much more. Click the link to Martha and you'll find another treasure trove of photos, letters, and links to other sources.

Let Travelocity's Fare Watcher notify you when airfares to your dream destinations drop by $25.

🖱 Worldwide Shopping Spree

Shopping at import markets for art, home furnishings, and clothing can be expensive. Would the expense be more tolerable if you knew a greater percentage of your purchase price went directly to the artist who created the work? NOVICA World Arts, an organization allied with National Geographic, provides a forum for artists from around the globe at http://www.novica.com to display and sell their wares and keep a greater percentage of the profit. Click the Featured Artists link to meet several artists, read their profiles, and see samples of their work. Click the link to Add To myARTISTS to receive e-mail updates when the artist adds new pieces to his collection.

🖱 Swing On A Star

If you're leaving the lights of the city behind for the evening, you may be able to enjoy a bit of stargazing. To find out which celestial bodies are most visible, in what part of the sky you're most likely to find them, and at what time viewing is optimal, visit Earth & Sky (http://www.earthsky .com). Click the link under STARcast called skywatching forecast, then click the Tonight's Sky link for what you might expect to see. Explanations may include what colors to look for and why the colors of stars differ from the planets in our solar system.

🖱 Leaving On A Jet Plane

Travel sites, such as Travelocity (http://www .travelocity.com) and Expedia (http://www .expedia.com), scour the Web for you, seeking the lowest airfare available. Travelocity's Fare Watcher tracks plane fare for up to five destinations after you register for a free account. You can opt for e-mail notification or view fares on your Fare Watcher summary page. Expedia's Fare Tracker tracks fares to three destinations and sends you information about the lowest airfare it finds. Scroll down to Flights (in the right margin of the home page) and click the Fare Tracker link. You'll have to register for this service, too, which is also free.

🖱 College Costs

If you're like most parents, you're wondering how on earth you can afford college tuition for your kids. We spent hours poring over SallieMae's WiredScholar Web site, reading about various tax-deferred savings plans, scholarship searches, loan options, and more. From the home page (http://www.wiredscholar .com), click the Paying tab to see information including College Costs, Savings Plans, Options For Paying, and Financial Aid. You can also click the link to Scholarship Search to find more than 600,000 types of aid. Fill out and submit the detailed, 20-minute online application, then sit back and wait for an e-mail message with aid packages that match your child's profile. ∎

Computer, Heal Thyself

Build An Emergency First-Aid Kit For Your Computer

IT'S INEVITABLE: IF YOU USE A COMPUTER, it will fail. Error messages, system freezes, corrupted files, and other glitches are an irritating part of a process that is normally useful and fun. You feel similar frustrations when your car breaks down or when the "universal remote control" you just bought isn't quite so universal. If you've used a computer for any length of time, you've experienced some sort of error, and you can rest assured that you'll experience more computing errors in the future. The trick is, as the Boy Scouts say, to Be Prepared.

There are several things you can do to prepare for your computer's bad behavior ahead of time. By anticipating computer problems, you'll be able to handle minor glitches and serious problems alike. You, and every computer user, should have a PC first aid kit so you can heal your system as soon as trouble crops up. We'll show you what you should have in your kit so that the next time you run into trouble, you'll be ready to stitch up your computer—stat!

The Most Important Remedies

We're not just speaking metaphorically when we say we want you to create a kit. You should find a small box or some kind of container into which you can put the items that follow so you always know where they are. Make some room near your computer work area where the kit will be easily accessible. You don't want to have to rummage through a file cabinet or bedroom closet while you try to remember where you put these important items that you swore you just saw yesterday.

The first and foremost item you should have in your first aid kit is an emergency startup diskette. This diskette is necessary if you can't get your PC to start up properly. The startup diskette will be created on a floppy diskette, because during the startup sequence your PC always checks the floppy drive first before it accesses the PC's hard drive. If your PC detects a startup diskette in the floppy drive, it'll use the startup diskette to start your computer. That way, if you do have a major hard drive or OS (operating system) malfunction, you can bypass it and at least get your system running.

Making an emergency startup diskette is one of those things that most computer users *know* they should do but don't. If you don't have an emergency startup diskette, see "How To Restart Your PC After Disaster" in this issue to learn how to create one. Then make it, right away.

The next item you should have in your first aid kit is a backup of all your important files. You should back up all of your important files on a regular basis, at least once every couple of weeks. See "Bargain Bin Back-ups" and "Cloning Your Data" in this issue for more information on how to back up files. Again, this is another one of those tasks that we

FIRST AID

often ignore at our own peril. The purpose of creating a backup of your files is so you can replace them if they become corrupted. But if you only update your files once per year, you'll be replacing corrupted files with badly outdated ones, which is not a very good solution.

Ideally, your PC will have a CD-RW drive, Zip drive, or other large-volume storage device to which you can back up files. If not, your PC's floppy drive will have to do. Select your storage media of choice and start backing up any file on your PC that you need, want, or have some nostalgic attachment to. We think that CD-RW media is the best choice for this job, but there's nothing wrong with using the other storage options we mentioned. If you have to back up your files to lowly 1.44MB floppy diskettes, make sure you label the contents of each diskette clearly as soon as you are done. This will make it a lot easier to find the right files when you need them.

You should also have your Windows CD-ROM in your kit. Your Windows CD-ROM is your PC's most valuable software. If you run into very serious problems, for example if you have to replace your computer's hard drive, you may have to reinstall your operating system. We hope you never have to go through this, but if you do you'll need to reinstall Windows before you can install anything else.

You'll want to keep this disc handy for other reasons as well. For example, you'll often be asked to place your Windows disc in the PC's CD-ROM drive when you install new hardware. Your PC will need to copy files from the disc to the hard drive so the hardware can run properly. Furthermore, you may run into a problem in which you'll have to replace some of your operating system's files, ones that won't be stored on your emergency startup diskette.

If you do run into a serious problem that requires you to reinstall everything, you will need to use the recovery disc

that came with your computer, so make sure that's in your kit. Most new PCs include a recovery disc, which is a CD-ROM that contains all the software that was installed on your PC at the factory.

Some More Band-Aids

It's doubtful that you bought a PC but didn't buy any software to run on it. You'll need these CD-ROMs if you have to reinstall a particular program or if you have to reinstall all of your software, as in the scenarios mentioned above. As with the first aid kit, keep the CD-ROMs close by.

You should also have a list of your PC's passwords within arm's reach. You may have signed up for an online service that requires you to log in with a password. You can also set up your computer to ask for a password before you can use it, and you can also password protect specific files on your PC.

You shouldn't use the same password for all of these things, however. If you use only one password and a thief snags it, that thief will have access to everything you've sought to protect. It's much better to use a variety of nonrelated passwords. Of course, if you do that, it'll only be a matter of time before you forget which password goes where, and that's where the list comes in.

There may be times when you find yourself in a computing pickle, which means it's time to call technical support. You should have a list of technical support numbers in your kit for your computer manufacturer and for your operating system vendor (likely Microsoft). You should add support numbers to your list as you add new hardware and software to your PC.

Most of the problems you run into when you're using your computer are easily solved. You may not even have to dig into your first aid kit. But when your PC needs emergency care, you'll save time and frustration by having these digital Band-Aids on call. ✦

What Happened? And What Should I Do?

It's normal to get that sinking feeling of desperation in the pit of your stomach when your computer runs into problems. But many of these problems can be solved quickly. Here's a list of common problems and solutions that should help you to solve them.

Problem	Likely Cause	Solution
PC won't start	PC unplugged or corrupted system files	Check to make sure plugged in securely/use startup diskette
Application won't start	Conflict with .dll file/corrupted file	Reinstall application
File won't open	Corrupted file	Reinstall from backup
Keyboard/mouse won't respond	Cords not connected securely/drivers corrupted	Check connections; reinstall drivers
Invalid Page Fault error	Can't access necessary file/conflict with another program	Close application and restart
General Protection Fault error	Memory conflict with another program	Restart; don't run unnecessary programs
Password won't work	Wrong password	Look up password in kit

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Copy, cut, and save for reference.

by Michael Sweet

Prepare For Disaster

Create Emergency Startup Floppy Diskettes

UNLESS YOU'RE THE LUCKIEST PERSON ALIVE, eventually your computer will refuse to boot. Whether it's due to hard drive corruption, missing startup files, or even a lightning strike, there will come a time when you will want to use your computer, and it will sit there, beep at you, and refuse to boot.

Most computers come with emergency startup floppy diskettes that can resuscitate an ailing PC, but the floppies fail to include any changes you've made to your computer over the course of its useful life. If you replace the CD-ROM drive with a DVD-ROM drive, CD-RW (CD-rewriteable) drive, or faster CD-ROM drive, the floppies will no longer work. Sometimes changes you've made to your hard drive, sound card, and other components have similar

effects, and that's why it's so important to learn how to create startup floppies manually. There are few aspects of computing where so few minutes of preparation can yield such enormous benefits in the long run, saving hours of frustration and a lot of lost data. Windows 95/98/Me all come with plenty of tools that will help keep your startup floppies current.

Boot vs. Startup

Don't make the mistake of confusing an emergency startup diskette with a boot diskette; the terms are often interchanged. Boot diskettes are simple creations designed to get a healthy PC to boot in a different way, and they do not contain all the system files you'll need for a full recovery.

For example, if you have Win98 but play a lot of old DOS games, you frequently need to make a boot diskette that contains the DOS configuration files. The files configure the computer's memory and peripherals so DOS can get the most out of the games.

In addition to having the necessary files and configuration information, you'll also use the

boot diskettes to bypass Windows and boot directly to a DOS environment. Startup or rescue diskettes are designed to let you boot directly into Windows and repair any damaged files they can along the way.

Creating a simple boot diskette in Win9x is easy. You can create it from either DOS or Windows. In DOS, insert a blank floppy and type: FORMAT A: /S. The floppy will be formatted and the current versions of your system files will be placed on it.

The Autoexec.bat file created by the Startup Diskette utility is far different from the Autoexec.bat file found in the WINDOWS ROOT directory.

You can edit these files by typing Edit X where X is the file name with its three-letter extension. For example, typing EDIT CONFIG is not the same thing as typing EDIT CONFIG.SYS.

In Windows, the process is much easier. Insert a floppy, open My Computer, right-click the 3 1/2 Floppy (A:) icon, and click Format. If the floppy is already empty and formatted choose the Copy System Files Only radio button and click Start to copy

Illustration: Kris Smith

Even though it's still possible to get a DOS prompt in Windows Me, it's impossible to create a simple boot diskette by typing format a: /s.

the files. Otherwise, click either a Quick (Erase) or Full format and check the Copy System Files box at the bottom of the window before clicking Start. It will take a minute or so to create the boot diskette. Be sure you remove it from the floppy drive before rebooting your computer or your system will access it instead of your hard drive and the system will boot into DOS. Because WinMe is trying to shed its DOS roots, it doesn't have an option to format a boot diskette with system files on it. It is possible to create a boot diskette that will get you into DOS, but you must run DOS directly from the floppy, and you won't be able to access any drive other than A:, so it's fairly pointless to try. And just in case you're thinking about manually copying the typical boot diskette files to a floppy by hand, don't. It won't work.

Emergency Diskettes: Windows 98/Me

Boot diskettes are great for pros who know how to edit system files and squeeze the most DOS performance from their computers, but they won't do the average user any good when disaster strikes. That's where emergency startup diskettes come in handy. Win95 came with a good tool called the Emergency Recovery Utility that was pruned from subsequent versions of Windows. The ERU backed up the system Registry, copied crucial system files, and basically created a

mini backup of the computer's current configuration.

Win98/Me users aren't completely out of luck, however, as both operating systems come with automated tools for creating startup diskettes that usually do a good job of getting you back into Windows where you can access more advanced tools to repair the major damage. With the introduction of Win98, the Startup Disk utility was upgraded with many new features including a boot menu at startup and a RAMDrive to store files temporarily if you can't access the hard drive. Perhaps most importantly, for the first time CD-ROM drivers appeared on the

diskettes so, at the very least, users could easily reinstall the operating system if things got out of hand. WinMe's Startup Disk utility has the same features. As long as you don't format your entire hard drive before reinstalling the operating system, all user-created files should remain intact; however, Windows settings, program installations, and other aspects of the system might be messed up. See the "Digital Resurrection" article in this section for information on recovering from that sort of trouble.

In Win9x/Me, the process for creating a Startup Disk is the same. Keep the Windows CD-ROM handy and put a blank floppy in the drive (or one that has files you definitely don't need anymore). Click the Start button, choose Settings, then Control Panel, and double-click the Add/Remove Programs entry. Click the Startup

When Startup Diskettes Fail

A few situations may arise where the startup diskette does no good. When you boot your PC, the first thing that is initialized is its BIOS (Basic Input /Output System), which uses a set of software instructions or hardware switches to initialize the rest of your hardware, including the hard drive and system memory. If the BIOS sours, it's impossible to access Windows at all because the hard drive itself is inaccessible. The way to tell if the BIOS is bad is to watch for any errors that arise during the computer's POST (Power On Self Test). The POST usually generates messages about how much RAM

your system has and what drive letters and capacities the attached hard drives have. It also lets you know whether it detects a mouse or keyboard. If these messages don't appear, or if the computer simply beeps when booted, it's likely there's something wrong with the BIOS.

If beeping occurs, look at the documentation that came with your computer to see if the PC is generating a standard error code. Sometimes the frequency of the beeps signifies specific problems. If you determine that the BIOS is bad, all is not necessarily lost. Although the BIOS is stored on a computer

chip, most can be flashed, meaning you can use a diskette containing a newer version of the BIOS to update the BIOS. You may need to contact the PC's manufacturer to determine if the BIOS can be flashed. You'll also need Internet access to download the new BIOS data and copy it to a diskette. Read any directions carefully and ask a trained PC expert for help if you can because flashing the BIOS is not a task to be taken lightly. Errors during the procedure can sometimes render the PC completely inoperable until you can replace the BIOS chip, a procedure that is expensive and risky. ✛

Disk tab and click the Create Disk button. Wait for the automated process to finish, following any on-screen prompts, and remove the floppy from the drive.

Examining The Files

Now that you have a startup diskette, let's take a closer look at the contents in case any errors arise during the emergency startup procedure. One of the most important files is Readme.txt, which contains instructions for using the startup diskette that you should immediately print out and store in a safe place. In case you forget, you can open the file in DOS by typing EDIT README.TXT.

Whether you make a boot diskette or a startup diskette, they will always have at least three essential system files on them: Msdos.sys, Io.sys, and Command.com. The first two files work together to form the core of the MS-DOS operating system, which is called the kernel. Without these basic files to access your hardware and make it all work in concert, your PC is basically reduced to a pile of expensive, unrelated hardware. Command.com contains the information for the command line interpreter, which is the interface you use to type and submit DOS commands.

Aside from these must-have files, boot diskettes created in Win98 have a Drvspace.bin file. This little file lets you access data contained in compressed drives, just in case you used Windows' DriveSpace utility to free up some space. MS-DOS won't even recognize a compressed drive unless it has Drvspace.bin to help it along.

Startup diskettes contain a slew of extra files, and one of the most important is Fdisk.exe, a DOS utility that you can use to format and partition your hard drive. Your recovery diskette should include this utility. If not, see if there's room to copy it to the diskette manually. The file is in C:\WINDOWS \COMMAND in Win98/Me.

Two other files you'll hear a lot about are Autoexec.bat and Config .sys, which contain all of the settings and file paths used to access and configure system memory and other hardware. Most startup tips you read will require making edits to one or both of these files so it is imperative that you have copies on your startup diskette. Unless you really know what you're doing, don't manually edit any of the files on a startup or boot diskette. If you must open them in Windows (to apply tips you read about elsewhere),

This is the Config.sys file generated by the Startup Diskette utility. Our original Config.sys file in Windows Me was completely empty.

be sure to use Notepad or another plain-text editor. The extra formatting that full-blown word processors, such as Microsoft Word, apply to documents can render the files inoperable.

There are plenty of other important files on a startup diskette, but the final one you'll want to pay attention to is the CD-ROM driver. This file lets MS-DOS "see" and access your CD-ROM drive, which is essential if you need to reinstall Windows. Open the Config.sys file on the startup diskette using Notepad and look for

all of the lines that contain a back-slash followed by your CD-ROM's drive letter, such as device=oakc-drom.sys /D:mscd001. Make sure that every .SYS file referenced in these lines is present on the startup diskette. If they aren't, search for the missing files by clicking the Start button, Search, and Files Or Folders and copy the files manually to the diskette. Even though the Win98/Me startup diskettes contain CD-ROM drivers, it's always a good idea to have a manual backup handy so you might want to create a separate diskette containing only the drivers. Win95's startup diskette utility doesn't copy the CD-ROM drivers to the diskette so you'll have to do it manually.

If disaster strikes, don't use the startup diskette as a first resort. Instead, you should try to boot into Windows Safe Mode or try a few other tricks that may let you access Windows' more powerful recovery features, such as WinMe's System Restore utility, that are not accessible from the startup diskette. Again, see the "Digital Resurrection" article in this section for more information.

It is very important to properly store and maintain your recovery diskettes. Try to get in the habit of making new recovery diskettes every month or so. You'll want to store them in a safe place, away from magnetic fields because magnetic interference modifies or erases the diskette's contents. Putting the diskettes on top of a speaker is not a good idea. To really play it safe, create two or three startup diskettes and rotate them when you make updates so if a diskette gets lost or damaged you'll always have an "emergency emergency" backup. With luck you'll never have to cash in this particular insurance policy; however, if you do, there are many other articles in this section that can help. ✦

by Tracy Baker

Bargain Bin Backups

Built-In Win9x Backup Utilities Are Better Than Nothing

FOR ALMOST AS LONG as people have been storing data on computers, people have been losing data. Electrical surges, hard drive crashes, and viruses catch most of the blame, but we're willing to bet that human error has more to do with data loss. We've experienced diskettes attached to file cabinets with refrigerator magnets, spilled coffee on tape cartridges, and various other mishaps resulting in the wistful phrase, "I probably shouldn't have deleted that."

Microsoft knew early on that users needed an easy way to make copies of their crucial data. For example, early versions of its backup utility, such as in MS-DOS 3.31, let users without tape drives back up large batches of files by spanning them over several diskettes. The backup utilities in Windows 95, 98, and Me are easier to use for most people, as their graphical interfaces are much friendlier to novices than DOS' command line.

We'll tell you what Win9x backup utilities are all about, including WinMe's System Restore feature for "turning back time" on your PC. The following article, "Cloning Your Data," has step-by-step instructions on how to back up your data, but we do have some tips for you.

Win95

Win95's Backup utility is pretty basic. It supports floppy diskette drives, a short list of tape drives (excluding Travan), and some other undocumented peripherals. Don't be afraid to try out your storage device with Backup; it might work, and it might not. For example, our Zip

100MB drive worked, but Microsoft cautions users that Backup can't span a large backup set (the group of files you choose to back up in a single session) across multiple Zip disks.

The idea is to choose the folders and files for a file set (files you know you'll need to back up regularly) and save them as a SET file using the File menu's Save As command. Later, you can open the file set by clicking File, then Open File Set to do a backup or restoration (also called a restore) without having to choose each folder or file again. In other words, you use the file set as a template to create a new backup set every time you back up its files. If something bad happens to your files, you can restore them from the backup set.

When you choose the files in your file set, concentrate on your user data. This includes your word processing documents, spreadsheets, browser bookmarks, and settings files from your applications (if you know where they are). Any important file you've created or that holds information that would take you a long time to rebuild is a candidate for your file set. On the

other hand, you may not want to waste disk or tape space trying to back up your whole hard drive if you already have Windows and your applications on CD-ROM. If you do decide to back up your entire system, and you have a big enough tape or disk, you can open the Full System Backup.set file set Backup thoughtfully provides for you. The Full System Backup set is the best way to back up Win95's Registry, which keeps track of all of your computer's configuration settings, including hardware and software.

Backup lets you do full backups of your file set or incremental backups to save time. An incremental backup will back up just the files that have changed since the last backup of any type (full or incremental). Backup decides which files have changed by their names and last modified dates compared to the date of the last incremental backup. This version of Backup cannot do differential backups, discussed below. You can specify a full or incremental backup

by clicking the Settings menu, selecting Options, clicking the Backup tab, and marking the appropriate radio button.

Whichever type of backup you choose, Backup will save it as a QIC file. Just after you click Start Backup, Backup will ask you to name that particular backup set. Remember, the file set you named and saved is reusable, so a good move here is to name the backup set after the file set plus some identifying information. For example, if you're doing a daily incremental backup of your "My Files" file set on Wednesday, you might name your backup set "MyFiles - Inc - Wed 2-7".

You can make backups easier by dragging and dropping icons in your Desktop. Click the Start button, Find, and Files or Folders. Search for Backup.exe. When Windows finds it, right-click it and choose Create Shortcut. Windows will ask you if you want the shortcut placed on the Desktop. Click Yes. Now do the same with your file set. When you want to back up your files later, simply drag the file set's icon into the Backup icon. Backup's Settings menu has a Drag And Drop window that lets you tell Backup to prompt you before the backup, minimize itself during it, and close down afterward.

If you need to restore a complete file set later, you can choose where to put the restored files in Settings, Options, and the Restore tab. If you just want to extract the files without their folders to a particular place, choose Alternate Location, Single Directory. If you choose Alternate Location or Original Locations, Backup will also put the hierarchy of all the backup set's folders into the destination folder. The Restore tab is also the place to choose whether Backup should verify files after you restore them or overwrite files of the same name.

So is your computer's data safe after using Win 95's Backup? Not

completely. If your system won't boot to Windows for some reason, you won't be able to restore it from the backups you made. Without running Backup in Windows on a functioning system, you can't access those QIC files. However, you might be able to access your files using another Win9x system's Backup utility. For example, Backup version 4.10.1397 on our Windows 98 Second Edition (Win98 SE) PC restored a compressed file backup from Win95's version, but Microsoft says that Win95's Backup won't restore files backed up using DOS.
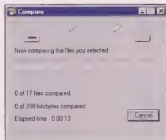
Win95's Backup can compare backed up files to the originals to make sure they survived the trip.

Backup in Win98 resembles Win95's but adds differential backups, password protection, and other improvements.

In addition, Win95's Backup has no wizards (walkthroughs for common tasks) to help new users get started. It also has no feature to back up your files automatically, although if you have Microsoft Plus! 95, you can use System Agent to schedule regular, unattended backups (see "Scheduling Backup to back up your files" in Windows Help for details). Nevertheless, third-party utilities such as Dantz Retrospect Express Backup ($50), NTI Backup NOW! ($60 download), and VERITAS Backup

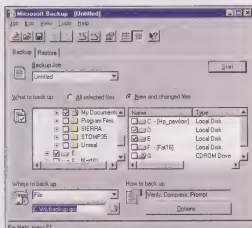Exec Desktop ($79) are better backup packages.

Win98

Although Win98's Backup utility has more features than Win95's, it still has the same look and feel. Among other things, it can do differential backups, guard your backup set with a password you choose, and back up the Registry in any backup set.

Incremental backups are fine for quick backup sessions between regular, full backups. However, if you need to restore your system after a few incremental backups, you'll need the media from the full backup and every incremental one since then. Differential backups are similar to incremental ones, except that they back up any files that have changed since the last full backup. This means that after a full backup and a few differential ones, your restoration would require only the media from the full backup and the last differential backup. With the Backup tab selected, you can choose a differential backup by clicking Job, Options, the Type tab, New And Changed Files Only, and Differential Backup Type.

While you have the Backup Options window open, click the Password tab to keep your backup private. The Advanced tab lets you choose whether to back up the Registry, and the General tab lets you choose from two levels of compression. Finally, the Backup Wizard and Restore Wizard icons on Backup's main toolbar lead to step-by-step help for new users.

We successfully backed up and restored files from a formatted CD-RW (CD-rewriteable) on a Win98 SE system with the DirectCD 5 packet-writing utility running. Unfortunately, Win98's Backup still doesn't natively support CD-R (CD-recordable).

Again, your storage device might work with Backup even if it's not listed as a supported device.

In addition, Win98's Backup still has no built-in automatic scheduling. However, you might be able to restore your files if Windows won't boot. You'll need to use your Windows Startup diskette (assuming you made one) to access the System Recovery utility on your Win98 CD-ROM. System Recovery will ask you for the last Full Backup Set you made in Backup (again, assuming you made one). See Backup's Help topic "Restoring, All Files."

WinMe

The main problem with WinMe's Backup is that it's hard to find. It doesn't install with WinMe or show up in the Windows Setup list of potential components as it does in Win98. Insert your WinMe CD-ROM, choose Browse This CD, click the ADD-ONS folder, click MSBACKUP,
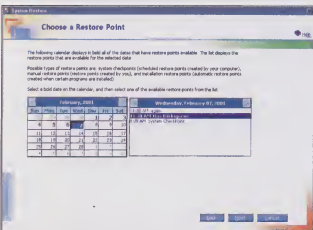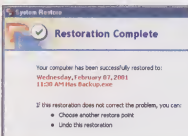
WinMe's System Restore isn't really for backing up data, but you can use it to return to the "good old days" — that is, last week before you installed that hideous device driver.

then click Msbexp.exe. Once installed, WinMe's Backup works in the same fashion as Win98's.

WinMe's new System Restore feature (Start, Programs, Accessories, System Tools, System Restore) isn't exactly a backup utility, but you can use it to "roll back" your system to the way it was before a certain event. System Restore sets a new **restore** point, or snapshot of your system files and Registry settings every time you boot, install most recent programs, or install something downloaded from Windows Update. It will also set a restore point every 10 or 24 hours, depending on system usage.

You can set a restore point of your own before installing an application or opening an attachment, and then have System Restore roll your PC back to that point if something goes wrong. You can even undo the last restoration if you change your mind.

System Restore is a great addition to Windows, but its scope is somewhat limited. It may not track certain programs with older installation routines, and according to Roxio public relations specialist Tracy Kohn, it isn't much help for unbootable systems. "If a system becomes unbootable for any reason other than a failed revert, the only recovery option is to reinstall [WinMe]," says Kohn, whose company sells the system rollback utility GoBack. "GoBack... can restore a system even if Windows becomes corrupted or won't boot, thus eliminating the need to reinstall the operating system or other applications."

Kohn also says GoBack continually sets new restore points whenever the hard drive sits idle for a few seconds, which means you could roll back your system to practically any time you choose.

Finally, GoBack can roll back all user data including your documents to earlier states, not just certain system files. "This is a critical difference," Kohn says, "when struck by damaging viruses like ILOVEYOU...which destroyed user files and in some cases the entire contents of a hard drive." However, Microsoft's approach is good for situations in which you want to undo harmful changes to your system's settings without losing Word, Excel, or other documents you've created or modified in the meantime. If you accidentally lose a new file during a System Restore, undo the restoration, place the file in the My Documents folder, and perform the restoration again. System Restore conveniently ignores files in My Documents, the Recycle Bin, and a few other locations.

The disadvantage of System Restore and GoBack is that they take up about 10 to 12% of your hard drive (system Restore needs a minimum of 200MB). Clearly, neither utility is recommended for PCs with small hard drives.

Like Clockwork

It's a hoary old cliché, but it's true: Even a limited backup tool that you use is better than an awesome one you don't use. As far as data protection goes, regularity counts. Furthermore, if your data is sensitive or critical to your business, you should store a copy of your backed up data in a secure place in another building. This offers better protection from fire, theft, or natural disasters.

If you can't justify the cost of a better third-party backup or system restoration program, you should at least take advantage of the ones Windows provides. As long as you recognize their limitations and work within them, they can be effective in protecting your system's data. ✦

by Marty Sems

eMail ▼ 1 new message

Daddy,

here's what i did today.

i flew over tall buildings.
i fought bad guys.
i ran really fast.

come home soon.

i want to play.

(Done) (Reply) (Save)

Like an email from your son, or even a favorite bedtime story. Simply amazing.

Simply Palm
palm.com

Cloning Your Data

RECENTLY, ONE OF OUR WRITERS got a distress call from his mother. Her computer had become infected with a virus that erased some of the files required to boot to Windows. In the process of fixing the problem, a technician reformatted her hard drive and reinstalled Windows, erasing all her data along the way. Every Sunday school lecture, e-mail message, and file on her computer was gone, and because she didn't have backup data, it was gone for good.

Fortunately, she doesn't use her computer for business or storing important personal information, so this occurrence was an inconvenience more than a disaster, but not everyone would be so lucky. It's never too soon to ponder the effect losing all your financial and tax records, family history information, and e-mail messages would have, much less losing a doctoral thesis or that best-selling novel you're working on.

If you're experiencing pangs of guilt for not protecting your data, this article is for you. We'll show you how to back up your files so that you never lose data, regardless of what happens to your computer. Moreover, we'll show you how to make those backups quickly. In fact, most readers will find that they can back their files up while they grab a cup of coffee or run to the bathroom.

Data Prioritization

Backing up your files isn't hard, but making an effective backup quickly takes some planning. Fortunately, you will only have to go through this preparation once.

The first thing to do is establish a hierarchy of importance in order to determine how much protection to give various types of files. For example, if Microsoft Office stops working, you can get the installation CD and reinstall the damaged file(s). Because it is

so easy to recover Office without a backup, backing up your Office files (or any other commercial software you have installation diskettes or CD-ROMs for) makes little sense.

The same is true for shareware or freeware, which you can download from the Web any time you need it. In fact, it rarely makes sense to backup software. This is especially true since most software installations modify the Windows Registry (a database containing information on program configurations and user preferences) and will not run from a restore unless the program's installer restores those same Registry settings. However, if the files

containing your best-selling novel or tax records become damaged, you may find it difficult or impossible to replace them without a backup. Since these data files are important to you and difficult to replace, it makes sense to back them up frequently.

In general, the files on your hard drive fall into four categories. The first, Programs, includes Windows, Office, and any other software you have purchased and any shareware or freeware you have downloaded.

The second category is configuration files. These are the files that programs create to store their settings or other files you create to customize your computer. If you make changes to Windows, the OS (operating system) stores that information somewhere, either in a configuration file or the Registry. The same is true for changes you have made to any other software. Being able to restore this information is nice but not essential. For configuration data stored in the Registry, restoring it may not be worth the effort.

Data is the third category. It includes the documents, spreadsheets, presentations, and other files that you create and modify. These files are irreplaceable if they are lost, so it is essential to back them up on a regular basis.

The fourth category, static data, includes the MP3 and video files that you download or create. They differ from regular data in that you'll rarely modify them once you create or download them. You can re-create these from a CD or download them again, so you may not need to back them up. If you wish to have a backup, however, you only need to make a single backup when you first save them to your PC.

File Segregation

Now that Microsoft's FAT32 (32-bit file allocation table) supports large

hard drives (the previous version, FAT16, only recognized drives or partitions up to 2GB in size), many users have one massive drive that contains everything. The trick to having an efficient backup strategy is to make frequent backups of just your data while making only occasional backups of programs and static data (if you back the last two up at all). However, this can be difficult if everything is lumped together. The solution is to segregate your files, putting program files together with configuration files and then putting data and static data in their own separate areas.

The PC we used in preparation for this article has about 1,112MB of programs and configuration files, 500MB of data files, and 3,841MB of static data. With all of that lumped together, a backup consumes almost 5,500 MB of space, and it takes a considerable amount of time to transfer 5,500 MB from the computer to the backup media. Imagine how much quicker it would be to transfer just the 500MB that really need to be backed up.

You could try to configure a backup routine that just backs up the data, but there are two easier approaches. The first is to partition your drive into three logical hard drives. That way, you could have programs and configuration files on your C: drive, data on the D: drive, and MP3 files on the E:

Hardware & Software Options For Backups

You can use just about any data storage medium to back up your data; here are a few products and formats you should consider.

Floppy diskettes. At one time, floppy diskettes were the most common form of backup media in use. However, prices for other, more convenient storage media have dropped, and file sizes and hard drives have grown so large that floppies are no longer a viable means of backing up entire systems.

Zip disks. Zip disks and other removable media are essentially high-capacity floppy diskettes. A Zip disk can hold either 100MB or 250MB of data. Even the slower parallel port models can transfer data fast enough to perform a data backup in only a few minutes. You can add a parallel Zip drive to your PC for $100 or less, making it an excellent way to retrofit backup hardware to a computer.

Many backup software programs support Zip disks, but the best approach is to use WinZip or a similar program to compress data files before storing them on Zip disks. That way, if you need to restore your data to another computer the chances are high the target PC will have the software you need.

CD-Rs (CD-recordables). Recordable CDs are an excellent choice for backups. Blank CDs cost less than $1 in small quantities and 50 cents in bulk. Just about every PC has a CD-ROM drive, so you'll be able to recover your backup files on almost any computer. Because they are optical in nature rather than magnetic, stray magnetic signals won't damage them, and the mechanism used to read them doesn't make physical contact with the media surface, so they last longer.

A blank writeable CD can hold almost 700MB of uncompressed data. If you want to back up less than this, you can use the authoring program that came with your CD-R drive to copy your data selectively. If you need compression, want to make incremental backups, or want to make larger backups that span multiple CDs, you will need special software, such

as NewTech Infosystems' NTI Backup NOW! ($80; 714/259-9700; http://www.ntius.com). It can compress data and write backups that span multiple CDs and lets you select the files to include in the backup. It can also create an emergency boot CD for Windows 98 and Windows Me.

Tape. Nothing beats a tape drive for large backups. Tape drives are available in a wide variety of capacities and speeds. The simpler ones connect to your parallel port, while the faster, larger ones connect internally. You should select a tape drive with enough capacity to fit all your backup files onto a single tape. That way you can run the backup at night without swapping tapes.

We should point out that although tape drives have high storage capacities and low per-MB costs, they do have several important limitations. For starters, tape formats are not interchangeable. Also, tape drives are not as common as Zip or CD-ROM drives, so if you must restore to another PC, you may have difficulty finding one with a

compatible tape drive. In addition to using the same tape format, the two drives must also use exactly the same software to read the same tape.

Additionally, not all tape drives have recovery software that runs in DOS. If your tape drive software requires Windows to run, you will have to at least install Windows and the tape drive's proprietary software before you can attempt a restore.

Software. Windows Backup supports a number of media types, but many of them also come with third-party backup utilities you can use if you want features that Windows Backup doesn't offer. One such product, Backup Exec Desktop 4.5 from VERITAS Software ($80; 650/335-8000; http://www.veritas.com) is an excellent example. It supports tape drives, CD-Rs, and CD-RWs, as well as Zip drives. In addition to tape, it supports writeable CDs and Zip drives. It also has an option to create a disaster recovery backup that lets you boot from floppy diskettes to recover from a disaster when Windows will not boot. ✦

drive. You could then back up the data on the D: drive quickly every night and back up the programs and static data less often.

Partitioning a hard drive with Windows requires that you reformat the drive, which erases any data on the drive surface. Don't worry; a program from PowerQuest called Partition-Magic ($70; 800/379-2566, 801/437-8900; http://www.powerquest.com) can painlessly partition your hard drive in just a few minutes with no loss of data.

While this approach works well, you should strongly consider leaving your hard drive as-is and purchasing a second hard drive to partition and use for both data and static data. Hard drives are inexpensive and easy to install. Having all your data and static data on a separate physical drive makes it simple to move that data to a new computer if your current computer fails or you buy a new one. It also allows you to pull your irreplaceable data if you have to have your PC serviced.

Readers with newer computers have extra incentive to add second hard drives, as several vendors have stopped shipping Windows CD-ROMs with their new PCs. Instead, you get a "recovery" CD that essentially erases the entire hard drive and replaces its contents with the files just as they come from the factory, including hundreds of programs you may not even want. If your data is on that hard drive when it is "recovered," it is erased. Keeping your data on a second drive will leave it unaffected by this process.

Backup Types

You can perform two basic types of backups, full and incremental. A full backup is a backup of every file in your backup set (the group of files you've designated to include), whereas an incremental backup is a backup of only those files that have changed since the last backup. Incremental backups are much faster and require

less media space but are harder to track, more difficult to restore from, and more likely to have problems during the restore.

Typically, you will have several sets of backup media. You back up to the first, then rotate to the second, and so on until you run out of media and then start over with the first. This is called a rolling backup. Having multiple backups protects you from damaged storage media, and lets you restore your data from one of several earlier versions.

Microsoft Backup's Backup Wizard takes you through the process of duplicating your data step by step.

You must also be concerned about where you store your backup media. If you store it at the same physical location as your PC, you are making an on-site backup, while media stored somewhere else is an off-site backup. On-site backups are more convenient but do not protect against fire, theft, or other disasters because the backup media are also lost. Some people maintain both for convenience and added security.

Backup Strategy

Each file type needs its own backup strategy. Programs and configuration files only need to be backed up when you install a new program, delete an existing program, or make major changes to a program's configuration settings. These occurrences are generally rare, so you will only need to back up these files occasionally. Because programs take up a lot of space, you should run this backup at night, or

some other time when you won't need the computer for other tasks.

MP3 files and other static data files rarely change, and many users only rarely add new files. That makes this data a perfect candidate for an incremental backup when you add new files or change existing ones.

Your data is likely to change on a daily basis and generally has the most value of any files stored on your PC. For these reasons, you should back it up frequently. As mentioned earlier, we have about 500MB of data on our test PC, and it compresses down to fit onto a single 100MB Zip disk. Our PC has an internal Zip drive, so a full backup of all our data takes less than 10 minutes. In the space of a coffee break, we can create a full data backup with no disk swapping.

You may also find that your data will compress onto a single Zip disk. If you have the slower parallel port Zip drive, you can run the backup during lunch or at night, or run faster incremental backups.

If your data is extremely important, you might not want to depend on a single backup media. Your backup plan may include daily full backups to Zip disks and weekly backups to tape. You may even want to make monthly CD-R (CD-recordable) or CD-RW (CD-rewriteable) backups in duplicate and store one copy of each off-site. With such an approach, it is unlikely that you will lose much data, and you can let all the backups listed above run without supervision.

Using Microsoft Backup

If you use Windows 98 or Windows Me, you already have a decent backup program called Microsoft Backup right under your nose, although you'll probably have to install WinMe's Backup before you can use it. Load your WinMe CD-ROM, click Browse This CD, click the ADD-ONS folder, then MSBACKUP, and click Msbexp .exe. Backup will install in a few moments, then reboot your PC and you're ready to make a backup.

1. Start Backup by clicking the Start button, pointing to Programs, Accessories, and then System Tools, and clicking Backup.

2. Backup runs a wizard (a step-by-step guide for new users) that offers three choices: Create A New Backup Job, Open An Existing Backup Job, and Restore Backed Up Files. Select the first option, then click OK.

3. The wizard asks if you want to Back Up My Computer or Back Up Selected Files, Folders and Drives. The first option performs a full backup; the second lets you select which files to backup. Select the method you want (if you select a full backup, skip step four).

4. If you elected to select the files to back up in step three, use Backup's Windows Explorer-likeinterface to select the data you want to back up.

5. Indicate whether you want your backup set to include all the files you've marked or just the ones that you've added or changed since your last backup.

6. Select the backup device to use. Microsoft Backup works with Zip drives and some tape drives, but not CD-R drives. You can even create backup files on your hard drive, although if you only have one hard drive this rather defeats the purpose.

7. The wizard asks if you intend to Compare Original And Backed Up Files To Verify Data Was Successfully Backed Up and if you want to Compress The Backup Data To Save Space. The first option double-checks the backup but doubles its completion time, so it's best for unattended backups. The second option decreases backup size and
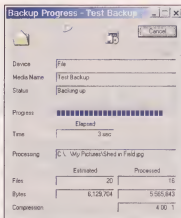
The Backup Progress dialog box keeps you informed as to how much of your files have been copied and how long it should take to finish.

is a good way to economize data storage space.

8. The wizard asks you to name your backup job. Enter an appropriate moniker and click the Start button to begin backing up your files.

The Windows 95 version of Microsoft Backup requires the same information but lacks a wizard to walk you through the process. Rather, it presents you with a dialog box and requires you to make the selections manually. Once started, the following steps work in Win95:

1. Click the Backup tab.

2. Select the files you want to include in your backup set and click the Next Step button.

3. Select the tape drive or subdirectory to receive the backup.

4. Click the Start Backup button.

5. Enter a name for your backup set and click OK.

Both versions keep you informed of their progress with a progress indicator dialog box. When your backup is finished, click the OK button and close the program.

Safe Data Is Happy Data

Some readers may want to begin backing their data up daily, while others will probably stick with weekly or monthly backups. Whatever program you choose, if you follow the suggestions we've outlined in this article, you'll have all your data located together for quick and easy backups, and your backup files will be safe and sound. Because your backups will be so fast and easy, you won't be tempted to skip them, and your data will always be protected. ✦

by Ronny Richardson

Internet Backups

Backing up to a remote site using the Internet is the newest way to perform a backup. There are a number of free sites you can use for this purpose, but since most of them only offer around a few megabytes for free, most users will only be able to use these sites to backup their most critical files. Fee-based sites are available to handle as much data as you have, but sending large amounts of data will be tedious and time-consuming unless you're equipped with high-speed Internet access.

Backing up across the Internet has two main advantages. First, your data is stored off-site and is protected by professionals, so you don't have to worry about losing it. Second, you can restore from anywhere you have access to an Internet connection, so your backup is always available.

Free Online Storage Sites

FileGenie

50 MB free, http://www.filegenie.com

FloppyCenter.com

60MB free, http://www.floppycenter.com

FreeDrive

20MB free, http://www.freedrive.com

i-drive

50 MB free, http://www.idrive.com

My Docs Online

20 MB free, http://www.mydocsonline.com

How To Restart Your PC After Disaster

Boot Options To Resuscitate Your System

WE SINCERELY HOPE that you never have to use the startup and rescue diskettes you learned to create in "Prepare For Disaster" in this section, but PCs can be unstable, which makes emergencies inevitable. Unfortunately, these problems can be compounded by improperly using startup diskettes. Select the wrong option, and "POOF!" there go the contents of your hard drive. Successfully recovering from a disaster involves far more than simply popping your rescue diskette in the drive and sitting back while the computer does all the work for you.

The first thing to do when your computer refuses to boot is identify the part of the startup procedure that's triggering the problem. If nothing happens at all when you press the power button, the culprit is usually hardware. Power supplies rarely fail (unless they're completely overloaded), but we've had several power cables and even a few power switches go bad. Always check the simplest things first: look for loose cables (pets love to play with dangling cords) and examine the power strip to make sure everything else plugged into it is working.

Perhaps the worst thing that can happen is that the computer powers up, makes either no noise or emits strange noises, and nothing appears on the monitor. Again, bad connections are usually at fault so check that your video card is properly seated and both ends of its cable are firmly connected. If you hear loud clicking noises and the hard drive light on the front of the PC's case is lighting up, prepare for the worst. It's possible you have a bad hard drive, and nothing short of a complete replacement will fix the problem. You'll need to take the old hard drive to a data recovery specialist to avoid losing data.

The most typical trouble is that the computer boots part way before stalling or generating an error message. A partial boot is the lesser of all startup evils, because generally software is to blame. The error message might refer to a piece

of hardware installed in the system, but often Windows cannot find enough system resources to accommodate the hardware, or you have corrupt software drivers. Usually you can fix both of these problems by removing and reinstalling the hardware. The process isn't painless, but you shouldn't lose data or have to reinstall the operating system.

Using The Startup Diskettes

We simulated a few disasters in Windows 98 and Windows Me and then used the startup diskettes to get back into the system, repair damage, and ultimately restore Windows' normal boot process.

When you boot a system using a Win98 startup diskette, a Startup Menu appears with three choices: Start Computer With CD-ROM Support, Start Computer Without CD-ROM Support, and View The Help File. Generally the first choice is best because you can access the Win98 CD, if necessary. If you decide to look at the Help file, remember that it's a DOS program, and you can't navigate it using the mouse. Use the arrow, Page Up, and Page Down keys to move around in the document and access the menus by pressing ALT-*N* (*N* being the underlined letter in the option you want) or using the arrow keys to highlight options. To select an option, highlight it and press ENTER.

WinMe's startup menu presents users with four choices instead of three, but they basically accomplish the same things. The choices are Help, Start Computer With CD-ROM Support, Start Computer Without CD-ROM Support, and Minimal Boot. The Minimal Boot option simply gets you to a DOS prompt, which is probably C>, without loading the CD-ROM drivers or creating a RAM drive. As with Win98, we recommend selecting the option that loads the CD-ROM drivers.

In addition to the Startup Menu options, there are a few shortcuts listed at the bottom of the screen that can come in handy. Command Prompt [press

Illustration Ellis Smith

SHIFT-F5] and Step-By-Step Confirmation [SHIFT-F8] are rarely necessary, but Safe Mode [SHIFT-F5] is very important. Attempting to enter Windows in Safe Mode is undoubtedly the first thing you should try; if Safe Mode works, there's a good chance you'll be able to boot Windows in Normal mode with little trouble. You can read more about it in our "Using Safe Mode" sidebar.

If Safe Mode doesn't work, make sure the Windows Registry is intact. Open Scanreg.exe, which can detect and repair bad Registry entries and let you make a backup of the existing Registry if no errors are detected. To launch the utility, type Scanreg.exe at the DOS prompt and press ENTER. If you get the message Bad Command Or File Name, you will want to go to C:\WINDOWS\COMMAND and type the file name. Assuming you're starting directly from the A>, type CD and press ENTER and then type **CD** Windows \Command and press ENTER again.

When the Scanreg.exe program launches, read the opening screen and press ENTER to run the scan. To navigate the screens, highlight options using the arrow keys and select them by pressing ENTER. If you have a backup Registry, Scanreg.exe will repair and report errors. If there are no errors, you'll be prompted to create a fresh backup. Do so, and press ENTER at the next prompt to return to the command line. Remove the startup diskette and reboot the computer to see if you can access Windows (or at least Safe Mode).

If Windows reports that the Registry is the cause of your startup problems, use Scanreg.exe to restore the Registry using one of the backups created

Reinstalling Windows

Many times when the system won't boot, a startup diskette cannot resuscitate the system (this is especially true in Windows 98). In that case, the only way to solve the problem is to completely reinstall the operating system.

The reinstallation process works differently depending on what type of operating system CDs were bundled with your computer. You should be aware of the consequences before committing to the procedure. As for the CDs, some manufacturers ship their computers with full versions of Win98 and Windows Me. You may have to use the standard CD if you purchased an upgrade. Most manufacturers sell computers with recovery CDs, which contain a customized version of the Windows operating system along with drivers for all the hardware the computer originally came with. Ideally, you should be able to pop a recovery CD into your drive, reboot your computer, and re-create your computer

to its factory-new condition. Note that "factory-new" means just that: You will lose all of the settings, hardware and software installations, and perhaps data you've created since you purchased your computer. Be sure to check with the manufacturer to find out exactly how the recovery CDs will affect your files.

If you have a bootable recovery CD, it's worthless if Windows doesn't know where to look for the boot files. Most computers are configured to first check the floppy diskette drive and then go to the primary hard drive if no boot files are found on the floppy. You can configure your PC to check the CD-ROM drive first instead, but the procedure requires changing settings in the computer's BIOS (Basic Input /Output System). During boot up, access the BIOS by pressing a key, which varies but generally is the DELETE or F2 key. Refer to your PCs documentation for information on accessing the BIOS. You'll

also need to look up the procedure for changing the boot device order and modify it so the system accesses the CD-ROM drive first, followed by the floppy drive, and finally the hard drive. Save the changes, make sure the bootable CD is in the CD-ROM or DVD-ROM drive, and reboot your computer. The installation process will begin automatically when the CD-ROM drive is activated.

If you have a standard non-bootable Windows CD, manually reinstalling Windows using a startup diskette can be a simple procedure or a complex problem depending on how damaged your Windows installation is. Always try the simple method first, which is to boot the computer using the startup diskette and select the Start Computer With CD-ROM Support option. Switch to your CD-ROM drive at the prompt but keep in mind that the drive letter likely changed because the startup diskette creates a virtual RAM drive.

For instance, if the CD-ROM drive was E:, it likely was bumped to F:. Once switched to the CD-ROM drive, type **setup** and press ENTER to start the installation. Follow the prompts and budget an hour or more for the setup procedure.

If that doesn't work, your computer likely has larger problems that will require reformatting the entire hard drive before reinstalling the operating system. The startup diskette contains tools for doing this (FDISK, a partitioning tool; and FORMAT, which handles the formatting), but they will delete all of the information on your hard drive. Partitioning and reformatting a hard drive are complex procedures that are beyond the scope of this article; however, your startup diskettes have all the utilities you'll need to perform a partition or reformat. You will find more detailed articles at our Web site, http://www .smartcomputing.com. ✦

automatically by Windows or manually by you. At the command prompt, (C:\WINDOWS\COMMAND>), type **Scanreg.exe /restore**. Note that there is a space between Scanreg.exe and /restore, also known as a switch (a subcommand that modifies the main command and is always preceded by a slash).

When Scanreg.exe loads this time, you'll see a list of Registries, archived according to the date they were backed up. They also will have a note saying [Started] or [Not Started], and you'll want to use a [Started] entry. This means that Windows was successfully started the last time that Registry was used. It may take a few minutes for Windows to replace the current Registry with one from the archives. When it's finished, you'll see the message: You Have Restored A Good Registry. Remove the startup diskette from the floppy diskette drive and press ENTER to reboot the computer and see if the fixes worked. If not, you may need to repeat the procedure and select an older Registry further down the list.

Another diagnostic tool you'll want to run is ScanDisk. From the A> or C> type **Scandisk.exe /all /surface**. The /all switch tells the utility to scan every drive on the computer, and the /surface switch triggers a diagnostic test that checks the hard drive platters for physical errors, which may cause any number of problems.

ScanDisk will report any hard drive errors and provide three options: Fix It, Don't Fix It, and More Info. Choose Fix It and the startup problem may be corrected. After completing the file and directory scan, ScanDisk will ask if you want to perform a surface scan. We recommend running this test because surface errors generally indicate larger hard drive trouble is looming on the horizon. If ScanDisk reports there are surface errors and you get back into Windows after the scan, at the very least you should back up all of the drive's contents. You may want to consider taking the PC to a technician for a drive inspection (and possible replacement).

No Diskette? No Problem.

All too often PC users find themselves in a situation where the computer won't boot, but they haven't created a startup diskette. It's not the end of the world, and there are still ways to get to your data. You may need to have access to another PC or pony up some cash at a local computer shop to back up everything. Many

times reinstalling the operating system without reformatting the hard drive is the best thing to do, but you may want to consider other alternatives.

Borrowing a startup diskette from a friend is worth a shot but generally won't work because he likely has different hardware and software installed on his computer. If you can access

the Internet from work or a friend's computer, be sure to check the manufacturer's Web site for software downloads. Some manufacturers, such as Dell, keep the exact specifications of the PCs they sell on file and let owners download hardware drivers and software patches tailored specifically for each computer. ✦
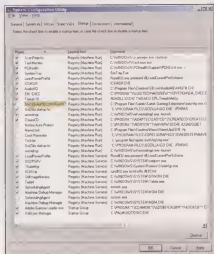
The System Configuration Utility can be used to keep unruly programs from loading automatically when Windows starts.

Windows Me & System Restore

The WinMe startup diskette works much the same way as a Win98 startup diskette, with some minor differences. We've already discussed the slight Startup Menu differences, but you can also use WinMe startup diskettes to correct problems with the System Restore utility, which is unique to WinMe. When trouble strikes, System Restore lets users "roll-back" the computer to an earlier, working configuration. Sometimes after the procedure is

done, you still can't boot Windows, not even in Safe Mode. If you booted using a startup diskette, you'll have the option of undoing the system restoration that caused the problem. Just click the Revert The Restore Changes Made To My System option and reboot the computer normally. Use the System Restore utility to choose a different rollback point and try again.

Final Recovery

Your first priority after fixing Windows is to do everything possible to make sure the same thing won't happen again. Painful as it sounds, this means you need to re-create the state the computer was in before things went south, ostensibly to see if the same startup problems occur. If the computer crashed and refused to boot, it's important to check any files that were open to see if they were lost or became corrupt due to the crash. Some software, such as Microsoft Word, has auto-recovery features that attempt to save files before the entire system goes down. The files will reappear as soon as you launch the application. Save the files immediately and compare them to your originals (assuming the originals are intact) to see how much damage was done.

If new hardware seemed to cause the problem, try uninstalling it (if you didn't already do so to get back into the system) and run Windows without it for a time to see if the crash is triggered again. Download the latest driver files for the hardware from the manufacturer's Web site and reinstall the hardware using those drivers instead of the floppies or CDs that it came with the hardware. Manufacturers frequently release new drivers by the time hardware hits the shelves, so you also should consider visiting the manufacturer's Web site before you initially install the hardware.

The same thing applies if software is the root of the problem. Try to remember what applications were open at the time of the crash and run them again to see if they cause trouble. Occasionally something as seemingly benign as loading a certain Web page can cause a crash.

Consider the following possibilities when dealing with software. If your PC crashes at specific intervals, make sure there isn't a program that is scheduled to run automatically; antivirus software and e-mail programs configured to check for e-mail every few minutes are notorious for this. Programs that load automatically when Windows starts are also problematic because they cause trouble before users can do anything.
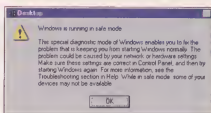
Safe Mode lets you troubleshoot without interference from all of the hardware drivers.

One way around this is to hold down the SHIFT key during boot up, telling Windows to bypass these self-launching startup programs. If you get into Windows normally or via Safe Mode, click the Start button, Programs, and look for startup. Expand it, and if you see an icon for the file causing problems, right-click it and click Delete.

Advanced users should click the Start button; expand Programs, Accessories, and System Tools; and click System Information. When the utility loads, choose System Configuration Utility from the Tools menu and click the Startup tab. This is a much more thorough list of the programs configured to load each time Windows boots. It's possible to scroll down the list to find the program causing problems and prevent it from loading by removing the check mark from the box in the Name field. Be careful because Windows requires some of these programs. The Cleanup button at the bottom is also a good way to purge outdated entries from the list so startup programs left over from software uninstalled long ago don't interfere with the startup process.

There are many things that may have changed from the point your PC refused to boot to the point where you fixed it, especially if you've had to reinstall Windows. User settings may have been reset to their defaults; programs may look like they're installed, but Windows won't be able to access them, and hardware settings may need to be adjusted. For tips on recovering files and reconfiguring your software and hardware, see "Digital Resurrection" in this section. ✦

Using Safe Mode

One of the entries on the startup menu is Safe Mode, and it's important for troubleshooting. When Windows boots in Safe Mode, it loads only the most essential startup files necessary to see and use Windows. You can use the mouse and keyboard and have limited access to monitor support (at a fixed resolution of 640 x 480). Windows bypasses the Registry, drivers for most other hardware, user settings, and other startup routines so they don't interfere with the boot process.

The beauty of Safe Mode is that it provides basic access to Windows so you can remove hardware drivers and modify configuration settings. You'll find Safe Mode necessary right after installing a piece of hardware or software that causes Windows to crash every time it's booted. The only way to get back in and tell Windows not to look for the troublesome installation is through Safe Mode. You can make all the changes using the same input devices, utilities, and conventions you are used to working with in Windows, making it possible to use troubleshooting wizards and Windows' automated hardware and software installation (and uninstallation) utilities. For example, it is possible to enter Windows in Safe Mode, right-click My Computer, click Properties, and click the Device Manager tab. From there, look for devices with conflicts and change their installation settings or disable them by right-clicking the device entry, choosing Properties, and using the dialog boxes.

Sometimes Windows boots into Safe Mode on its own if it detects a problem, but it's possible to manually boot into Safe Mode. Turn on the computer and hold down the F8 key to make the startup menu appear. Use the arrow keys to highlight Safe Mode and press ENTER. Similarly, if Windows keeps asking if you want to boot into Safe Mode but you simply want to load Windows with all the bells and whistles, select Normal before pressing ENTER. Do this for advanced troubleshooting only (for instance, to see where errors are being generated) because constant Safe Mode requests indicate there is still a problem that needs fixing. ✦

by Tracy Baker

Digital Resurrection

Use Backup Files To Restore Lost Data

In "Cloning Your Data" on page 44 of this issue, we talked about setting some data aside for a rainy day with the help of Microsoft Backup. Now it's raining. Your system has crashed, you've lost valuable data, and you just want things back the way they were the last time you backed your files up. Where do you start? In this article, we'll show you how to use those backups to restore your computer to fighting trim.

Backups Revisited

The first issue in planning a restore is what kind of backup files you have to work with, full or incremental. Full backups are much easier to restore from; you simply restore from your last backup.

In order to make an incremental backup, on the other hand, you start with a full backup, and for every subsequent backup, you append only those files that have changed. Incremental backups don't overwrite old copies of files; rather, they add new copies of every modified file each time you back your files up. The end result is that during a restore, you must find and restore the correct one, or there will be gaps in your data.

Additionally, if you delete a file, it will not show up on subsequent incremental backups, but will remain on the earlier backups. If you are only restoring selected files, this will not be a problem, but if you're restoring all files, you'll restore the file you deleted as well. Since a deleted file would not be on the latest backup, full backups tend not to have this problem.

As you can see, incremental backups give you more problems during a restore than do full backups. Because incremental backups are faster, you are trading the convenience of faster backups for the difficulty of completing the restore.

Tools Of The Trade

In some cases, having your backup data may be no help at all without the proper hardware or software to help you get it off the CD, Zip disk, or other storage media. This depends largely on how you made your backups in the first place, such as whether you used a zip utility to compress your data, and whether you used a backup utility that requires Windows to function.

If you have an uncompressed backup file on a CD, you can restore its contents to almost any PC. Simply use Windows Explorer (or DOS) to copy your data (documents, spreadsheets, presentations, and other things you create and save) or static data (digital music or video files, items you download and save but rarely alter) files from the CD to the PC's hard drive. You can also use Explorer for a restore if the target computer has a Zip drive and you stored your backup to a Zip disk without compressing the files. If you used a zip program to compress the data or static data on the CD or Zip disk, you can easily restore it by using WinZip, ZipMagic, or another zip utility to extract the data to the proper directory. As we'll discuss below, restoring programs (Windows, Office, etc.) is more difficult.

Some backup utilities store data on backup media in formats other than the .ZIP format. If this is true in your case, you will have to install that program onto the target computer to handle the restore. However, some backup programs let you create a boot diskette containing a scaled-down version of the backup program, so you can perform a restore without having first to install Windows and the backup program.

Another difficulty with tape drives is that the target computer must have a compatible tape drive and either a copy of the software installed, or a boot disk with the mini-version. Backup data written to a tape by one backup program is commonly useless to another backup program, so you will need the same program for the restore that created the backup. If your PC was damaged or stolen, you may have problems locating a replacement tape drive that uses the same format, especially if you used an older drive. For this reason, we recommend never relying solely on tape backups.

That said, you should keep in mind that all types of backup media are fallible. With some compression formats, a tiny defect in the media can render the entire backup unreadable. For this reason, you should never have just one copy of your backup. Tape,

CD-Rs (CD-recordables), and Zip disks are all cheap enough that you can afford several sets. If your data is critical, we recommend maintaining a minimum of three on-site and three off-site backups (utilizing at least two types of data storage media). With this many, it is unlikely that faulty media will keep you from restoring your files.

Two Degrees Of Restoration

There are two main occurrences where you will need to restore files from a backup. The first is if your computer suffers a major problem, such as hard drive failure or data loss as a result of power surges or power failure. The second is if one or more of the files on your computer get erased or damaged, or become infected with a virus. In the first case, you may need to restore all the files you had on your PC, whereas in the second you can probably just restore the individual files you lost.

You should handle each of these situations differently; your exact course of action will depend on the type of media you used to make your backup and the type of backup you created.

Full restoration. If your computer has suffered a major problem and a full restore is necessary, you have a decision to make. Will you restore your programs, or do you want to reinstall them? Restoring them will be quicker, but reinstalling them will yield a more stable and faster system.

Many backup programs, both for tape drives and recordable or rewritable CDs, allow you to create a bootable emergency floppy diskette. These generally contain a version of the restore program you can use without having a running version of Windows present. If your backup program has this option, you should create and test the boot diskette now, before you actually need it. If you keep both on- and off-site backups, it would also be wise to have at least one copy with each.

When you boot your PC with this floppy, it loads a custom version of DOS and a scaled-down version of the restore program. It can restore your hard drive to its condition at the time of your last backup, prior to the catastrophe that ravaged your data. You can then reboot from the hard drive and have a fully functional, ready-to-use version of Windows with all your software ready to run. The advantage of this approach is that it preserves all your program configurations and Windows user preferences.

Restoring Lost Settings

If you have worked with your computer for a long time, it is likely that you have modified a large amount of the user preference settings in both Windows and the programs you use regularly. When restoring files, you would naturally like to keep as much of that customization as possible. Unfortunately, this is difficult to do without special software designed for this purpose, because programs don't store the changes you have made in a common location. Many of them are stored in the Windows Registry and are therefore very tough (if not impossible) to move to another computer. Others are stored in various configuration or program files, and are usually easier to transfer or restore.

Here are some tips on restoring some Windows settings and some of your settings from two commonly used applications:

Windows stores your Start menu settings in the folder C:\WINDOWS\START MENU. It stores most menu options as shortcut files. Copy these files to another computer to transfer all your Start menu options. Be aware that if you do not first erase the contents of this subdirectory on the target computer, you will merge the existing menu and the one you're importing. In addition, if you don't install the programs that correspond to your Start menu items on the target computer (or if you install them in a different location), the Start menu items will not work.

Microsoft Word stores its AutoCorrect entries in the Windows Registry, so they aren't easy to transfer. It stores any macros you write, changes you make to its menus, or icons you add to its toolbars, in a file called Normal.dot in your template subdirectory. Copy this file to the correct subdirectory on the target computer, and your new version of Word will look much like your old version. To find the correct subdirectory for any Word file, open Word, click the Tools menu, Options, and the File Locations tab of the Options dialog box. Words you've added to its dictionary are stored in the Custom.dic file and you can transfer these to another computer as well. You should not copy any Word file while Word is running.

Netscape Navigator stores your Bookmarks in a file called Bookmark.htm. Its location differs depending on how you configure Navigator, so you will have to use the Find command to locate it. Copy it to the correct folder on another computer (again, not while Navigator is running) to transfer your Bookmarks.

Other programs use a variety of files and Registry entries to store the options you set. Sometimes you can transfer them by copying the proper data files to the target computer, but Registry files make the process tougher. Consult each program's documentation or look for information at its manufacturer's Web site to determine where it stores its user configuration information. ✦

If you have your data and static data on other partitions or other physical hard drives, you can now use the full version of the restore program to restore those if needed. Since hardware disasters frequently only affect your boot disk (usually your C: drive), though, you may not have to restore data to other drives.

This approach becomes more complex if you have an incremental backup to work with. In addition to working through each incremental backup, after you finish the restore you must deal with any programs or files that you deleted from the original computer during your backups. For this reason, we recommend that if you plan to restore your programs (as opposed to data, static data, or configurations) that you only perform full backups.

If you plan to reinstall your software rather than restoring it, you will need to have access to the installation CDs for all your software. While it can work to reinstall some programs and restore others, it is a delicate process because you must make sure that you use the most current DLL (dynamic-link library) files. You must also be sure you use the restored Registry, as restored programs may depend on their previous Registry entries to function properly (or at all). Using a restored Registry rather than using a fresh one means you will lose much of the benefit of performing a clean installation. If you don't have installation media for all your programs, however, this may be your only choice.

Once you've restored or reinstalled your programs, you are ready to determine whether you need to restore your data and static data as well. If you do, don't worry, the process is pretty straightforward. Data and static data don't use Registry settings or require DLL files, so you can simply restore all of the data from your most recent backup. If you have been making incremental backups, you must restore starting with the last full backup and then work chronologically

through all your incremental backups, from the earliest to the latest. Once the restore is complete, you will need to check your data to see if you restored any files that you had deleted since creating the backup.
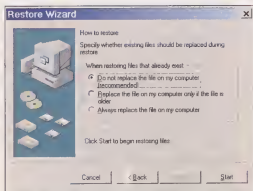
Microsoft Backup gives you several options for dealing with existing files when restoring your data.
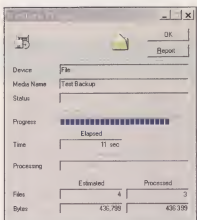
Microsoft Backup keeps you informed of its progress while it is running.

Partial restoration. If you have only erased or damaged a few data files, restoring is much easier. If you have and use several sets of backup media, we recommend that you perform a backup to the oldest media before you begin. That way, if you accidentally overwrite a file you did not want to change, you can get it back.

When you're ready to begin, load your most recent backup and use your backup program or Windows Explorer to search for the files you want. Most backup programs won't overwrite a newer file with an old one in their default configurations, so if

you want to do so you'll need to adjust their configuration settings. If you are using incremental backups, you will have to work backward, beginning with the most current backup, until you find the file or files you wish to restore.

Restoring Your Files With Microsoft Backup

Start Microsoft Backup by clicking the Start button, pointing to Programs, Accessories, then System Tools, and clicking Backup. Once started, the following steps work for both the Windows 98 and Windows Me versions:

1. Microsoft Backup runs a wizard that offers three choices: Create A New Backup Job, Open An Existing Backup Job, or Restore Backed Up Files. Select the last option and click the OK button.

2. Select the drive or storage device you will use to restore your backup files.

3. If the media you select contains more than one backup, you'll need to select which one to restore. Microsoft Backup displays the name, date, and time of each backup present to make this easy.

4. Select the files you want to restore (this step is crucial). Regardless of how you performed the backup, you can pick files or folders to restore individually or in groups.

5. Next, indicate whether you want to restore files to their original location or select a different one. Most users copy their restores to their original locations to keep things simple.

6. Tell Microsoft Backup how to handle the situation if the file you are restoring already exists. Your choices are to skip that file, replace that file, or replace it only if the backup file is newer.

7. Microsoft Backup tells you the media it will require. Click OK to start the restore.

The Windows 95 version of Microsoft Backup requires the same

information, but it lacks the Restore Wizard newer versions have. Rather, it lets you make your selections manually as you did when creating your backup.

1. Click the Restore tab.
2. Point to the storage device or hard drive subdirectory containing the backup.
3. Indicate the backup set you want to use from that location (if more than one are present).
4. Click the Next Step button. Microsoft Backup brings up a complete list of all the files contained in the backup set you selected in the previous step.
5. Select the files and folders to restore.
6. Click the Start Restore button.

With either version, Microsoft Backup keeps you informed of its progress with a progress indicator. When it is finished, click the OK button and close the program.

A Post-Restore Checklist

One thing you want to avoid is restoring your files only to find out something is amiss after you have overwritten your old backup files with new ones. This is more likely to be a problem after a major restore, or after moving data and programs to another computer. To avoid this, perform the following checks after any restore:

1. Restart your system to make sure it boots normally.
2. Make sure your printer, modem, CD-R or CD-RW drive, scanner, speakers, and other peripheral devices work.
3. Run a check of your system using your antivirus software.
4. Run ScanDisk.
5. Start all your programs and make sure they work properly. Reinstall non-functioning programs from their installation media (CD-ROMs or diskettes).
6. Make sure you can log onto the Internet and any networks you use.
7. Load every major data file. Scan through each one to make sure they appear normal. Note that problems often appear near the ends of files.

If you encounter a problem, you can solve it by working back through your restore to see what you overlooked or by restoring a missing file from an earlier backup. With a little planning and preparation, restoring your files from a backup can be a minor inconvenience rather than a major disaster. ✦

by Ronny Richardson

Putting Your Backups To The Test

Our writers make their living with their computers. At any one time, they may be working on several articles. Much of this work includes tight deadlines, so losing any or all of this data would be very damaging. For this reason, some of them are meticulous about making daily backups.

If you depend on your computer as much as we do, you'll want to not only make daily backups, but in addition to make certain that your backup strategy will both protect you from data loss and get your computer back into operation as quickly as possible. You might think that testing your backup strategy would be dangerous to your data or computer, but that is not the case.

Currently, you can buy a large hard drive for $150 or less. If you are willing to do so, you can safely and thoroughly test your backup strategy in an afternoon. Best of all, if you spot any problems with your backup strategy, you can fix those problems easily

and rerun this test. Here's how it works:

1. Buy a new hard drive large enough to store your program files and data.
2. Turn off your computer and open the case.
3. Take out your existing hard drive(s). This protects all your existing data and programs files.
4. Install the new drive.
5. Close the case and turn on your PC.
6. Restore all your program files and user data.

Chances are, you will run into a problem. Perhaps your boot diskette doesn't recognize your CD-ROM drive, or you can't locate a driver file you need. If this were a real disaster, you would be stuck until you could resolve the problem. To do so, you might have to go to a friend's house to download a driver, or buy a new copy of a program. If you get stuck while running this test, you can reinstall the old hard drives to correct the problem. You can then

replace the new hard drive and either start the test over (by reformatting the new hard drive), or continue from the spot where problem occurred. Once you have all your programs and data restored, you will have spotted any flaws in your backup strategy and can be certain that you can quickly recover from any problem.

Completing this test has two additional bonuses. First, you may find that your system runs faster and crashes less. That is because over time, as you install and uninstall or reconfigure programs, Windows and its Registry become cluttered. A reinstall from scratch removes all this clutter. The improvement is so great that many people perform a fresh reinstall of Windows and all their programs every six months or year. Second, you can put either of your hard drives on the shelf and have a working backup of your programs ready to slide into your computer on a moment's notice. ✦

Know Thy Data's Enemy

The Top 10 Risks To Your Data & How To Avoid Them

THE FIRST STEP in preventing any disaster is identifying the risks. The same holds true for threats to data on your PC. We rank the top 10 data risks below, along with some preventative measures you can take to keep your data safe and accessible.

1. Poor Data Management

Some security experts say maintaining a system to keep track of vital data for quick, easy access is an essential but vastly underutilized way to avoid data loss and wasted hours spent tracking down misplaced files. This includes designating specific folders or drives for certain types of data, and naming your directories to match the system so it's easy to find. Network users can benefit from using Windows NT or 2000 (as opposed to Windows 95, 98, or Me) to restrict access to their network and sensitive files.

2. Equipment Failure

According to data management software maker Ontrack Data International, hardware malfunctions and failures as a result of electrical shorts, static electricity, and hard drive crashes cause 44% of all user data loss.

To elude such mishaps, move your computer carefully when necessary to avoid jarring delicate components.

Also, keep your computer away from static electricity, humidity, and drastic temperature changes as much as possible. It's a good idea to perform periodic system checks using a utility such as Symantec's Norton SystemWorks, which can detect and repair some hardware problems.

3. Accidental Deletions

Occasionally accidents happen. Users delete important files, making data inaccessible and causing programs to function improperly (or not at all).

Regularly backing up your data is the best protection against deletions, but if you don't have backup files, try uninstalling and reinstalling the application

along with the deleted file. You can also try using Win98's System File Checker utility, a tool that scans your system and replaces deleted and misplaced files using your software's installation diskette or CD-ROM (click the Start button, click Run, type SFC in the Run dialog box, and click OK). Also, be sure to check your Recycle Bin, and if you have WinMe you can try its System File Protector feature that protects critical files from corruption and deletion.

4. File Corruption

Periodically, you may install new programs or driver files incompletely or over other critical files through no fault of your own. Using system diagnostic tools excessively can sometimes result in corrupt or incomplete files as well. Either event can disrupt the operation of related software or hardware, and can lead to frequent Windows freezes or crashes.

Win98's System File Checker might help in such cases, and WinMe users can use System Restore to return their PCs to their states prior to offending installations. We'd also suggest reinstalling affected programs, and if you have a recent backup this would be a good time to use it. To prevent such necessities, always pay attention to any prompts or warnings when installing software, and be sure the program you're installing is compatible with your PC and its operating system (OS).

5. Viruses

Antivirus software maker Sophos reports that its labs processed 800 new viruses each month during the second quarter of 2000 alone. In addition to deleting and corrupting user data, malicious code can wreak havoc on your computer system files, rendering your PC unusable.

Top 10 Data Threats

1. Poor Data Management
2. Equipment Failure
3. Accidental Deletions
4. File Corruption
5. Viruses
6. Power Surges
7. Online Invasions/Hackers
8. Losing Passwords
9. Power Failure and Brownouts
10. Insider Sabotage

The best protection against these invaders is up-to-date antivirus software, but you should also be aware of the content you download and what types of e-mail attachments you open. Don't download files from newsgroups and disreputable Web sites, for example, and be wary of e-mail attachments with .EXE and .VBS extensions that could launch malicious programs. If a virus does slip through, you may be able to download a patch for your antivirus software that will deal with it, then replace your lost data using your backups.

6. Power Surges

Though less common than accidental deletions and corrupt files, power surges can result in more severe data loss. Sudden spikes in the flow of electrical current can damage your hard drive and other delicate components irreparably.

To avoid surges, many users plug their systems into surge suppressors or protectors, which in turn plug into a wall outlet. You can purchase a surge protector for a few dollars, but many are only effective against one surge. Surge suppressors cost a little more, but can repeatedly keep surges from reaching your system. No protector or suppressor can adequately protect your equipment from a surge caused by a nearby or direct lightning strike, though, so it's a good idea to unplug your computer when severe weather is on the way.

7. Online Invasions/Hackers

The FBI and the Computer Security Institute found in a March 2000 survey that one in every four participating businesses detected attempts from outsiders to get to their data. Hackers routinely prowl IP (Internet Protocol) addresses seeking likely targets, and PCs with high-speed, always-on Web connections are most at risk.

There are programs that detect and block system intrusion attempts, such as Network ICE's BlackICE Defender or Symantec's Personal Firewall 2001. If you use Win95, Win98, or WinMe, you can also disable your OS's file sharing option, a feature that lets others access your files while you're online (click Start, point to Settings, select Control Panel, click Network, click the File And Print Sharing button, then deselect the file sharing option and click OK). This can be a problem if you want to share your Internet connection with multiple networked PCs, but the solution may be a hardware firewall solution such as an inexpensive network router.

8. Losing Passwords

If you use password protection to safeguard your data, forgetting your passwords can be a disaster. Even the most recent backup of password-protected files won't help without them. But passwords that are too simple are also a problem. CERT/CC (Computer Emergency Response Team/Coordination Center) estimates that 80% of company network security problems are due to poor password choices, so avoid passwords so simple that outsiders could guess them and access, delete, or change sensitive information.

You may want to use a password management program such as Passwords Plus ($12; http://www.dlcwest.com/~sorev) that generates secure passwords and keeps an encrypted list of them for you. Be aware, though, that such utilities are also require passwords for access to your list, so you may want to write at least one password down and store it in a safe place.

9. Power Failure And Brownouts

Brownouts can cause computer crashes and glitches in executable files, and put a strain on hard drive motors and other hardware. Sudden losses of power can also erase the information stored in your computer's RAM, deleting all unsaved data.

Periodically saving data in open applications is the easiest way to prevent data loss from power failures, but to be sure use a UPS (uninterruptible power supply) to prevent brownout damage. Some UPS units cost less than $50 and feature several minutes of emergency battery power, allowing you to save your data before shutting down your PC (most also feature surge suppression capabilities).

10. Insider Sabotage

Although relatively rare, insider sabotage certainly has the potential to cripple a business. In May 2000, for example, a single former employee caused around $12 million in data loss to his former employer, Omega Engineering, according to *Information Security* magazine's survey.

A professional audit of your business' data security and systems is a good idea, although preventing sabotage completely can be difficult.

Managing The Risks.

This may seem a daunting list of data killers, but you can minimize your risk with a few preventative measures. Periodically reassess threats to your data (because knowing is half the battle), develop (and use) a data management system for organizing your files, and keep your antivirus software current. And, at the risk of sounding like a broken record, don't forget that the best ally you have in the fight against nearly any data risk is to periodically back up your irreplaceable information on removable storage media and store it away from your PC. ✦

by Lori Robison

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Move Your Old Files To Your New PC

THE ANTICIPATION YOU FEEL when you get a new PC is very much like getting presents at Christmas. But just as many Christmas toys require some assembly, you'll need to set up a few things on your new PC before you use it. One of the biggest tasks will be moving your data from your old PC to the new one. You could buy a full-fledged networking kit, but it's not worth setting up an expensive network if you're only transferring files from your old PC to your new PC one time. We've found an easier, less expensive option. We'll also discuss two other options for moving your files to a new PC.

Put Your PCs In Synch

A direct connection between two computers is the easiest way to move data from one PC to another.

Laplink.com (http://www.laplink.com) has a program called PCsync that makes moving files to a new PC a breeze. PCsync includes a USB (Universal Serial Bus) cable and a serial cable, so you have everything you need to connect two computers in one package. It's designed to work with Windows 95, 98, NT 4, Me, and 2000, so unless you're using a *very* old OS (operating system) you should be able to use this program. You'll also need either Microsoft Internet Explorer 4.01 or Netscape Navigator 4.5 or later installed on both PCs. Finally, you'll need to install Java Virtual Machine (available on the PCsync CD-ROM) on both PCs. If either PC is missing any key components, such as Java Virtual Machine, the program will prompt you to install them.

Once the software is installed, simply connect the two PCs using either the included serial or USB cable. USB is the better option because you can transfer files much more quickly. However, if you're transferring files from a PC that uses Win95 or WinNT, the USB option won't work. Use the serial cable instead.

Now it's time to transfer files. Restart both PCs and start the PCsync program on *both* systems. The PCsync window resembles Windows Explorer, divided into four windowpanes. The bottom half of the window lists the files and folders for the PC you're currently using, and the top half of the window displays the files and folders on the remote computer. Click the plus box next to My Cable Connections in the upper left pane, then click the cable connection icon (either serial or USB) to see the drives, folders, and files on the remote PC.

You can transfer files in several ways using PCsync, but we like two methods in particular. The best way to move your data to the new PC is to use the Copy My Files wizard. Click Transfer on the Menu bar and then click Copy My Files To A New PC. This starts the wizard, which guides you through the process. One of the steps in the wizard allows you to choose which file types you want to transfer. There are several types of files you can choose to have transferred to the new PC automatically, including .DOC, .XLS, .GIF, .JPEG, and .MP3 files. PCsync will search your old PC for files of the type you select and automatically transfer them to a predetermined folder on the new PC. PCsync also copies all files it finds in your old

PC's My Documents folder, regardless of the file type.

If you want to have a little more control over which files are copied to your new PC, you can do it the old-fashioned way: drag and drop them. Pull up a chair to your old PC and click through the drives and folders in the bottom left pane until you see the files you want to transfer in the bottom right windowpane. Then, click through the folders in the top half of the window until you see the folder you want to transfer the files to. Click the file you want to transfer and hold down the mouse button. Move the mouse cursor to the desired folder in the top half of the window and then release the mouse button. You can transfer multiple files by holding down the CTRL key as you select the files and then drag and drop just as you would a single file.

If You Can't Link 'Em, Burn 'Em

If your old PC happens to have a CD-R (CD-recordable) or CD-RW (CD-rewriteable) drive, you can forgo buying a program like PCsync and copy your data to CD-R instead. You can buy a stack of CD-Rs for about $10, and you can easily copy your files, FAVORITES folder, HISTORY folder, and other important data to CD-R very easily. We'll walk you through the process using Roxio's popular Easy CD Creator 4 software.

When you start Easy CD Creator, you'll see several choices for creating different kinds of CDs, such as Audio, Data, and CD Copier. We're interested in making a data CD, so click Data. There are two options for recording data to a CD. You can choose DirectCD or Data CD. We prefer the Data CD option because discs made using this method can be read by any CD-ROM drive. The DirectCD version requires extra UDF (Universal Disk Format) drivers that may not be available on your new computer. It's best to
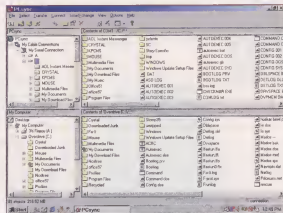
PCsync is an easy way to move files from one PC to another.
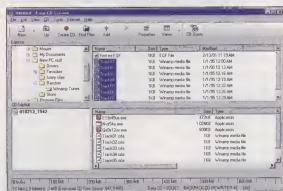
Use Roxio's Easy CD Creator to copy (or burn) your files to a disc, then transfer them to your new PC.

use discs made with DirectCD on the PC you used to make them.

Here's a quick overview of how to use the Data CD method. It's pretty simple. Click the Data CD button, which will open Easy CD Creator's Data CD interface. Click through the drives and folders in the upper left pane just like you would in Windows Explorer. The contents of the folders will appear in the upper right. Hold down the CTRL key and click all of the files that you want to copy to CD-R. Click the Add button on the tool bar. The files will be added to the bottom right, which is a kind of holding area for all the files you intend to copy. Repeat until you're sure you find all of the files you want to copy (or until you select enough files to fill up the entire CD-R). Once you're done selecting files, click the Create CD button on the tool bar. All the files you selected will be copied to the CD-R in one go.

If you know that your new PC can read discs made with Direct-CD, you can use that method to copy and move files also. The advantage of using DirectCD is that you can use Windows Explorer to drag and drop files and folders directly to the CD-RW drive. When you start DirectCD, it will format your CD-R, after which you can open Windows Explorer and start copying files. Right-click My Computer and click Explore on the pop-up menu. This will open Windows Explorer. On the left side of the Window, click through the drives and folders on your hard drive until the files you want to copy appear in the right side of the window. Click a file to highlight it and drag it to the icon in the left side of the window that represents your CD-RW drive. The drive will probably be labeled E:, F:, or something similar. You can copy multiple files from a directory at the same time by holding down the CTRL key as you click each file. When you're done highlighting the files, click and hold one of them, and drag it to the CD-RW drive. All the files you highlighted will be copied to the CD-RW drive.

The Hard (Drive) Way

If you don't want to buy a program to help you move files and you don't have a CD-RW drive available in your old PC, you still have another option. Although it'll require a bit more work on your part, you can simply remove the hard drive from your old PC and plop it in the new one as a slave drive.

Removing a hard drive from a PC is actually easy to do. (NOTE: We're going to assume the old drive is an IDE [Integrated Drive Electronics] drive) This isn't an article about removing and adding hard drives so we're going to give you a whirlwind tour of the process. For more information, though, see our Learning Series article,

"How To Install A Second Hard Drive" at our Web site (http://www .smartcomputing.com/learning/howto /harddrive). Shut down your old computer and any peripherals that are attached to it, such as a printer or scanner. Open the computer's case and ground yourself by touching the computer's metal frame. Detach the hard drive's power supply cable and the ribbon cable from the back of the hard drive. Next, use a Philips screwdriver to remove the screws holding the drive in place. Remove the hard drive from the drive bay.

Now shut down your *new* PC (if it isn't already) and open its case. Before inserting the old hard drive into your new PC, you should set the drive as a slave drive. There should be a jumper (in the form of a small plastic block) on the back of the drive. Make sure the jumper is in the slave drive position before you install the drive in a drive bay. Now slip the hard drive into an open drive bay. Before you push it all the way in, plug in a power supply cable that fits in the drive's power supply socket. Also, plug in one of the ribbon cable connectors to the back of the drive. Now, slide the drive into the drive bay and secure it using the screws from the old PC.

Close the case and restart the computer. You'll probably need to add the new hard drive to your BIOS (Basic Input/Output System) settings, so before your PC loads Windows, press F1 (or whatever your PC requires you to press to change configuration or system settings). Use the setup options to add the second hard drive. This process will vary from PC vendor to PC vendor, but here's how we did it on our test system. We pressed the Down arrow until the Devices And I/O Ports option was highlighted and pressed ENTER. Next, we selected IDE Drives Setup, again using the Down arrow. We selected IDE Hard Disk Drive 1 (as opposed to Drive 0, which is the new PC's original drive) and selected Enable. Again, the exact steps will vary but go through this process to make sure the computer enables the hard drive you've added.

If you've properly set the old drive as a slave drive, you shouldn't have any problems. Your OS will detect the drive and automatically assign a drive letter to it. Your new PC's original hard drive should be C:, so the hard drive you've just installed should have a letter, such as D:, E:, or F:.

Out With The Old

Before you move any files anywhere, create a few folders on your PC's master hard drive (the original hard drive in your new PC) for the files you'll move from the slave drive. That way, you're not just haphazardly dumping a bunch of old files onto your new computer's hard drive.

Now you're ready to copy files from the old hard drive you've just installed to the new PC's hard drive. You can use Windows Explorer in the same way you used DirectCD. Open Windows Explorer, click through the folders on the hard drive you installed, and highlight them by clicking them. Then drag and drop the files you want to copy to the PC's original (master) hard drive.

You'll probably be surprised at how much stuff you've accumulated on your old PC. You may be content to leave much of it behind, but you'll almost certainly want to move at least some files, such as pictures and financial documents, to your new PC. Use one of the methods above to zip through that chore so you can start using your new PC with your old files. ∎

by Michael Sweet

Licensed To Borrow, Not Steal

You can move software programs from one computer to another using the methods we discuss in this article, but we think it's easier to simply reinstall all of your software from scratch. That way, you can be sure you have a "clean" installation, leaving behind all the quirks your past programs may have accumulated over the years. But the main reason you shouldn't copy programs directly from one PC to another is because, more often than not, it's illegal.

If you're like many users, you may assume that when you buy the disc that the program's stored on, you're buying the program as well. But that's not the case. What you're really buying is a **license**, or permission to use the program, and this

license often comes with restrictions. You should always read the license agreement before you install or reinstall a program on any computer.

License agreements vary depending on the vendor and the nature of the program, but here are some general rules concerning the legality of installing software on a new PC. First, if you buy run-of-the-mill, shrink-wrapped software at a retail store, you can generally reinstall the software on a new PC *if* you remove it from the old PC. OSes (operating systems) generally follow the same rules as most retail software. You can reinstall an OS you already own on a new computer as long as you've removed the OS from the old computer.

Preinstalled software is another matter entirely. For years now, PC vendors have often added a few bonus software programs to their PCs, such as financial or multimedia software. You cannot reload pre-installed programs on a different PC, even if you remove them from the original PC. That software is only to be used with the computer that it was originally installed on and no other.

You would expect that you could legally copy free programs, such as the free version of RealPlayer or Winamp, onto as many computers as you like. But don't be so sure. Read the license agreement carefully. You may have to download and install these programs from scratch. ∎

Shout It Out Loud

YOU DESPERATELY NEED to check your e-mail for an important message, but the nearest computer is miles away. Fortunately, your cell phone is close at hand. A few moments later, Shoutmail's text-to-voice computer is reading your e-mail messages to you over the airwaves.

Shoutmail.com is one of a growing number of ISPs (Internet service providers) and Web sites that let you retrieve e-mail messages, check headline news, or send instant messages, all using a telephone. Better yet, access to Shoutmail's powerful service is free. Here's how it works.

1 Register for an account on Shoutmail.com (http://www.shoutmail.com) or call (408) 852-7325. Computer registration simplifies the process, plus you can customize your news preferences and address book right away. If you do decide to use a phone, a series of easy-to-use voice menus guide you. With either method, you'll be prompted to enter an account name, password, and some basic personal information.

2 Once you have an access code, you can use Shoutmail from any touch-tone phone or wireless device based on WAP (Wireless Application Protocol) by calling the access number nearest you. In most major metropolitan areas, this is a local call. Outside major phone markets, the call is presently long-distance.

9728088# (access code)
"Hey Johnny. How are things going?"

3 After dialing your access code, you can check your e-mail or browse the news topics you opt for on the Shoutmail Web site. The e-mail option works just like an e-mail program on your computer. You can skip, reply, delete, store, or mark a message as junk mail. Shoutmail will alert you to any new messages and guide you to your inbox, where a flat, computer-driven voice recites the message header and body.


4 When replying, you can send a voice-mail up to three minutes long, which the recipient can hear through streaming RealAudio or as a downloadable WAV file. You can also choose from some simple, preset text replies, such as Will Be There In 15 Minutes or Call Me.

"Phil, those plans will work. Let's try to get together later this week to discuss details."

5 If you want to send an e-mail to an address not recorded on your Shoutmail account, you might have to practice, because you'll have to enter the username and host with your phone's keypad. The process works like this: Press the key printed with the letter you want, and press either 1, 2, or 3, whichever correlates to the letter's position on the key. For example, for the letter "K," you would press 5, and 2, to specify the correct letter. It sounds more difficult than it really is, and Shoutmail lets you backspace if you make any mistakes. Note that the letters "Q" and "Z" are on the 7 and 9 keys, respectively.

6 Shoutmail's flexibility lets you check your other e-mail accounts that comply with POP3 (Post Office Protocol version 3), such as Yahoo! and Hotmail. To do so, on the Shoutmail Web site click Preferences and POP Mail Settings and follow the instructions. After you've properly configured this option, Shoutmail polls this account every 10 minutes for new mail.
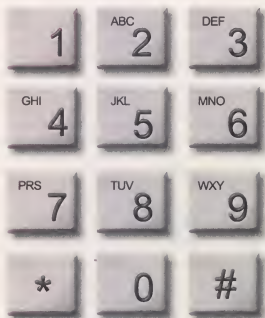
Compiled by Nathan Chandler
Graphics & Design by Andria Schultz & Fred Schneider

The Age Of Information

You Can Synch Or Sink

QUICK! HOW MANY COMPUTER-CHIP GADGETS do you use? Desktop, notebook, cell phone, PDA (personal digital assistant), pager? Chances are your daily life is intricately tied to one or more of these devices whether it's at work, at home, or in most cases, both.

In the Jurassic Park days before glitzy contact managers, e-mail, and the Internet, personal information was warehoused in a paper-based DayTimers, crammed into a Rolodex, or scribbled on Post-It Notes. Granted, it was not pretty, but your information was literally at hand. Today, as technology and Internet access become less expensive, more pervasive, and stretched to multiple PC and mobile devices, not only is there more information to manage, but there're also more places where the information can reside . . . and hide. Your current address book, phone list, and calendar could be scattered anywhere on the Web or on a desktop, notebook, Internet appliance, PDA, or cell phone.

If tracking information across diverse devices in multiple locations wasn't complicated enough, toss in different operating systems (Windows, Mac, Palm-OS, Windows CE) and competing applications (Internet Explorer, Netscape Navigator, Outlook, Lotus), to say nothing of the various versions of those products. Let's say you have different versions of Windows or Word on different devices, and you can begin to understand the Herculean effort required to keep a mountain of evolving electronic information organized—and more importantly—synchronized.

Even if you retype the same information into various gizmos or use a file-sharing or synchronizing method, each digital doohickey has some of what you need, some of the time, but rarely does any one have everything. Instead of managing and streamlining data, you're drowning it. You may lose or duplicate database contacts. You may miss or overbook meetings and leave e-mail unanswered. In the age of information, information isn't king; the ability to get your hands on what you need, when you need it, is.

Someday there'll be a single method for tying all of these devices together. Until then, don't despair. Whether you're just starting out and wondering which gadget works best or you schlep around more hardware than a combat commando, we'll show you how to keep all of your data, on all of your doodads, up-to-date, all the time.

Synchronization Strategies

Keeping information organized and synchronized between multiple devices is neither easy nor automatic, but it can be done. The trick: create a system that works with the hardware you own and the applications you use. Here's how to start.

In synch. PC to PC to PDA to cell phones to what? No matter where you want to store and access, the first step is to decide what you want to keep in synch. Do you need e-mail on your PDA or just contacts and a calendar? Will you be doing word processing, spreadsheets, expense reports, or something else? By deciding what information is important, you can better decide what applications you'll need on each device.

Whether you use a floppy diskette to shuttle files between PCs or one of the newfangled Web technologies discussed in the next section, pick one and stick with it. Diving into different synchronization methods is an open invitation to digital disaster.

Before you buy a PDA or cell phone, make sure it works with the PC and applications you already use. Although popular PDAs work with most popular applications and PIMs (personal information managers), you might need a third-party utility to make sure everything works together. For example, if you have a Palm Pilot and want to create Word, Excel, and other Microsoft Office compatible files, you'll need Documents To Go Professional Edition ($49.95; http://www.dataviz.com). On the other hand, PDAs using Microsoft Windows Pocket PC, such as some of Compaq's iPAQs and Hewlett-Packard's Jornadas, come with pocket-size versions of

these Microsoft's mainstays, making them a compelling choice for users who have standardized on these desktop applications. The more arcane the application, the less chance you'll be able to port it.

The Internet is full of user groups, Web sites both private- and manufacturer-supported, and newsgroups devoted to the hardware and software you're thinking of buying or already using. Sites, such as BrightHand (http://www.brighthand.com), boast a mother lode of practical information, tips, fixes, reviews, and work-arounds for just about every PDA. Discussion forums let you post questions and get answers in hours or even minutes.

Third-party Web sites, such as Handango, boast a mother lode of synchronization tips, fixes, reviews, and work-arounds for PDAs.

Most computers and PDAs ship with a synchronization standard. For example, Windows users get a clever synch program called Briefcase. Palm Pilots come with HotSync, and PocketPCs with ActiveSync. Even many electronic organizers, such as the Sharp Wizard OZ-770, employ a bare bones backup/swap utility. Be smart and check the manufacturer's recommended software before switching to a third-party method. Remember, once you've switched, it's easy for the manufacturer to fob off your synchronization problem as the other guy's fault.

When checking synchronization methods, especially software-related options, be sure you know who's ultimately responsible for tracking current data. In most cases, the burden falls on you, the user. To protect yourself, be on guard. Make frequent PC backups and check little things like the date and time on every device. A day or even a few hours off on one or the other can result in a file appearing newer than the one it's replacing. Products that synch

both ways can mistakenly overwrite a newer file with an older one. Ouch.

Now that you know what information you need synchronized, the devices the data will be stored on, and the applications you plan to use, you need to decide which synchronization method works best for you. We've divided them into three categories.

Simple Synchronization

The following methods focus on sharing information between PCs. They're inexpensive, easy-to-use, and target smaller files. The onus of synchronization falls on the user.

Copy to floppy. If you're updating information, such as spreadsheets, expense reports, or word processing files, you might need nothing more than a good old-fashioned floppy. Typically, each floppy stores 1.44MB, enough for a 700-page novel. On the plus side, floppies are almost universally accepted, they're cheap, the copy process is easy, and information can be easily exchanged. It is, however, more of a copy or exchange solution, not synchronization. You need to copy the correct file, and there's limited overwrite protection.

Copy to super floppy. For larger files, such as PowerPoint presentations and MP3 files, consider Iomega's Zip Drive (http://www.iomega.com). At $179.95, the drives support 250MB super disks that cost $20 each or $100 for a six pack. Typically, a 200MB Zip disk holds more than 150 floppies at about half the cost. The drive ships with programs for backing up, restoring, and synchronizing files between PCs. QuickSync, for example, will continually back up a specified document's

folders to the Zip drive any time content changes. Zip drives are easy to install and use. They are portable and good for backing up and transferring files between desktop and notebook PCs. The downside is, the drives and floppies are pricey, and you'll either need one on each PC or a portable external unit to shuttle between PCs.

Send attachments by e-mail. Sending files attached to e-mail is a popular way to share information. All you need is an Internet connection and an e-mail program, such as Microsoft's Outlook Express, which comes bundled with Windows 95/98/2000, or AOL. Attaching files to e-mail is cheap, fast, and efficient. Just about everyone has e-mail, but it's an inefficient method for transferring large files, and there's a risk of virus infection.

Online storage. "Virtual" drives are a terrific way to stash files for private or shared consumption. Free service sites include Xdrive (http://www.xdrive.com) and i-drive (http://www.idrive.com). Besides storage space, i-drive's synch program makes sure what's on your PC matches what's stored online. These sites are easy to use, excellent for sharing files
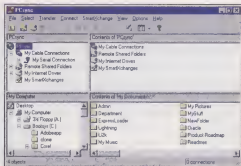
PCsync specializes in transferring software from one PC to another via a cable connection or over the Internet.

with other users, and inexpensive. You'll need Web access, of course, and transfer times depend on your modem speed and Web traffic.

Software Synchronization

These methods focus on sharing and synchronizing information between PCs and PDAs.

PC-to-PC software. Don't forget third-party synchronization programs. LapLink's $55 PCsync (http://www.laplink.com), which includes USB (Universal Serial Bus) and serial cables, and Puma Technology's $69.95 Intellisync For Notebooks (http://www.pumatech.com) transfer software from one PC to another via cable connection or over the Internet. PCsync features an intuitive, Explorer-like, split-screen interface that shows the contents of each PC. Swapping files entails clicking your mouse to drag what you want, where you want. A SmartXchange feature lets you selectively copy files that have changed since the last transfer. Intellisync places more emphasis on transferring and synchronizing PIM info, such as keeping contact, schedule, and e-mail data up-to-date. Versions are available for Palm and Windows CE PDAs and Sharp Electronic Organizers. For a complete list of products and applications supported, visit the company's Web site. These easy-to-use programs are cheaper than buying a Zip drive. They're good for synchronizing files from your desktop to notebook or for using a remote PC to grab forgotten files. The

Cahners In-Stat Group, a research firm, predicts that more than 1 billion devices will have Bluetooth capability by 2004.

Internet transfer speed depends on your modem and Web traffic, and your desktop PC must be turned on and connected to the Web. PCsync currently does not work with PDAs.

Hardware & Internet Connections

The major players in the PDA field, including Palm Pilot and Handspring

Visor and PDAs running Microsoft's Windows CE or Pocket PC, all come with built-in synchronization software.

PC to PDA. When you put the handheld in a cradle that's cabled to the desktop (or notebook) PC, press a button in the cradle to start synchronizing the machines. You'll find free and fee-based applications on the manufacturer's site (http://www.palm.com), as well as on third-party sites, such as Handango (http://www.handango.com). Using built-in software is free and easy, but the software is not intuitive for customizing. It does not work with all applications. Palm users need third-party software to make Microsoft applications work correctly.

Web-based synchronization. This method uses the Web to synchronize PCs, PDAs, and many cell phones. The caveat: Each company has partnered with different manufacturers, so you may need to switch your cell phone, for example, to get the service to work. Check each company's Web site for supported products.

With most synchronization methods, a PC is the central gateway, and data flows from it to ancillary devices, such as PDAs or cell phones. New online services from fusionOne (http://www.fusionone.com; limited free service, introductory price of $39.99 for one year, afterwards $99.95 per year) and Pumatech (http://www.intellisync.com) let you make changes on any device, which updates all of the others. Subscribers can schedule a meeting on a handheld and update a phone number on a cell phone, for example, and each device can use the Web to send the information to each other and to any desktop or notebook computer. We tested the beta version of Intellisync, which was free. Although Pumatech intends to charge for the final release of the service, pricing was not available at press time.

"Our synchronization technology is hardware and software agnostic," says Rick Onyon, president and CEO of

fusionOne. "You simply tell us what data, what applications, which devices, and/or what Web sites you want to keep connected and synchronized, and we'll do the rest."

Both fusionOne and Pumatech are working with partners to add specialized information to your devices. For example, if you enter travel information, it will be added to your handheld or computer at the next synch.

Pumatech's Intellisync service goes one step further. "A feature called Mind-It allows you to specify information on the Web that you want to know about as soon as it's made available—changes in your child's soccer schedule, stock quotes, sports scores, and eBay bids, for example," says Tom Hunt, vice president of Pumatech. The information is pushed from the Web site to any device. Press the ENTER key to access it. On the plus side, Intellisync supports popular applications and hardware, including cell phones. It's pricey, however, and each service supports different vendors. It also requires Web and mobile access.

Future Collaboration

If you carry a notebook, PDA, and cell phone, they should all work together. New synchronization standards, such as SynchML and Bluetooth (an ambitious open standard wireless communication technology), will someday link and seamlessly synchronize all of these devices.

Several companies, including Ericsson, IBM, Intel, Lucent, Microsoft, Motorola, Nokia, 3Com, and Toshiba, developed Bluetooth (http://www.bluetooth.com). It uses a tiny radio to send digital voice and data between wireless devices and desktop services over short distances. Limited to about 33 feet, it connects up to eight devices without a snake's nest of wires. Bluetooth devices began trickling into stores in late 1999. Cahners In-Stat Group, a research firm, predicts that more than 1 billion devices will have Bluetooth capability by 2004. ∎

by Michael Cahlin

Hardware On The Go

The Growing Pool Of Add-Ons For PDAs

BEFORE PALM-SIZED COMPUTERS hit the market in a big way, many busy professionals used small electronic organizers to keep track of their appointments, contacts, and tasks. When Palm introduced the original Palm Pilot 1000 in 1997, electronic organizers quickly became second-class citizens in the personal information management field.

The Palm Pilot performed all of the same functions as electronic organizers but was more flexible because users could add third-party software that let them do more with their Palm than just stay organized. Palm welcomed the development community that sprung up to support the platform. Before long, Palm users could play games, track their golf scores, look up reference information, and read electronic books (for an overview of PDA [personal digital assistant] software, see "Power Up Your PDA" in the January 2001 issue of *Smart Computing*).

The Next Evolution

Users still wanted to do things with their Palms that software alone would not permit. For instance, without a modem, there was no way to download e-mail directly to a Palm. Although Palms weren't made with hardware expansion in mind, a number of hardware modules clipped to the bottom or back of the PDA and used the serial port on the device. These units added to the size and weight of the device.

A startup called Handspring released its Visor line of PDAs in 1999. Handspring's Visor was the first PDA with a slot made specifically for adding hardware.

Handspring knew it needed the support of a development community that would embrace the platform and actively develop products for it the way the Palm software community had for the Palm OS. Handspring created an extensive developer support program and although it took longer than expected for new modules to make it to market, Handspring easily has the widest variety of hardware expansion options available.

Other Palm OS licensees are now looking into PDA expansion options. Palm has announced plans to use small postage-sized SD (Secure Digital) cards in future Palm OS devices, and Sony included support for its Memory Stick technology in its Sony CLIE. About the size of a stick of chewing gum, Memory Stick can provide up to 64MB of additional memory.

Expansion Options

The PDA you own will decide what hardware options are available to you (see the "Mix & Match" sidebar). Most Palm hardware still clips on to the back or bottom of the unit and must be designed for a specific form factor. That means hardware designed for a larger Palm III won't fit a smaller Palm V. PDAs with internal expansion slots exhibit more compatibility among similar devices. For instance, most Springboard expansion modules are compatible with the entire Visor line.

Springboard. Handspring's expansion model provides a consistent hardware interface for all of its products. The Springboard slot found in the original Visor is the same as the Springboard slot on the new Visor Prism.

The Springboard slot is cleverly designed. Many Springboard modules can slip entirely into the slot in the back of the unit. Handspring, however, did design the slot with an open face to avoid placing physical restrictions on developers. This design lets modules extend out the back of the device to accommodate modules thicker than the slot.

Handspring, however, holds the rights to the Springboard slot. You probably won't see Springboard slots showing up in third-party devices unless Handspring decides to license its design to third parties.

Palm. Palm is most often associated with the PDA market, but current Palm devices lack a dedicated hardware expansion port. Most Palm hardware accessories attach to the bottom or back of the device and communicate with the unit via its serial port.

Because Palm is a big name in this business, there is no shortage of hardware add-ons. Modems, cameras, voice recorders, and GPS (Global Positioning System) receivers are all available for various Palm form factors. You must make sure you buy the right hardware for the right device. Magellan's GPS receiver for the Palm V and Palm Vx, for instance, won't fit a Palm IIIxe.

The SD Card Association, which oversees the SD Card standard, is working on an SD standard for hardware expansion. When this specification is complete, manufacturers will be able to develop expansion modules that will be compatible with a range of SD compliant devices, including Palm PDAs.

Unlike Handspring's Springboard technology, the SD Card Association comprises several companies with an interest in promoting the SD cards in a range of devices.

Wireless Hardware

Wireless technology and PDAs are both about mobile access to information, so it seems natural to think that some of the most interesting hardware expansion modules involve some sort of wireless access.

Novatel Wireless (http://www.novatelwireless.com; 888/888-9231; 858/812-3400) makes modems for a variety of PDAs. Novatel's Minstrel III wireless modem ($369) provides wireless Internet access for Palm III devices including the Palm IIIe and the Palm IIIxe, and the Minstrel V modem ($369) supports the Palm V and Palm Vx models. The Minstrel S modem ($369) is a Springboard expansion module for the Handspring Visor. Although you can buy these modems directly from Novatel, you can often receive a discount if you buy the modems with service from a reseller, such as GoAmerica (http://www.goamerica.com; 888/462-4600; 201/996-1717) or OmniSky (http://www.omnisky.com; 800/860-5767; 650/969-7700).

Glenayre's (http://www.glenayre.com; 800/543-2382; 704/553-0038) @ctivelink module ($179 for the module alone or $428 with Handspring Deluxe) runs over the ReFLEX paging network and is meant to be a messaging device. Users can send and receive messages, including e-mail, using this Springboard module. The service has text-to-voice capabilities that let you send a written message to a telephone number. Users can also download news, scores, and stock information.

Another wireless Springboard module is Handspring's own Visor-Phone. The VisorPhone uses Handspring's built-in microphone to turn a PDA into a GSM (Global System for Mobile Communications) phone. The module supports SMS (Short Message Service), call waiting, caller ID, and three-way calling and has a jack to connect a headset. The headset is particularly nice if you need to check personal information while on the phone.

Modems

Just because you're on the road doesn't mean you can't use your HotSync software or check your e-mail. Modems were among the first hardware add-ons for PDAs and are still a popular accessory. Although you need a phone line to dial out, you never have to worry about network coverage or monthly fees associated with most wireless services. Plus, the hardware is cheaper.

One of the smallest modems available for the Handspring Visor is the $119.95 Thinmodem from CardAccess (http://www.cardaccess inc.com; 801/492-4750). The modem is the only Springboard modem that sits flush with the Visor. The advantage is that you can carry the Visor in a standard case, but the drawback is that you need a special cable to connect the modem to a phone line. The unit also runs off the Visor's internal power, so frequent use could drain your Visor's batteries quickly.

The Handspring Modem ($129.95) is larger than the Thinmodem but includes its own AAA batteries. Of course, the unit won't fit in a standard Visor case when the modem is plugged in.

Palm also has a modem available for the Palm V and Palm III series.

The Palm V Modem Accessory ($169) snaps onto the back of a Palm V. The modem has its own set of AAA batteries that Palm claims will last for about three hours. Palm also sells its PalmModem Connectivity Kit ($99) for Palm III series PDAs. The kit contains a modem that clips on to the bottom of a Palm III.
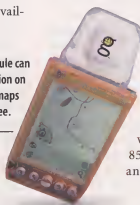
GPS

We've all been lost at one time or another, but with a GPS module, you'll always be able to find your way home. A number of companies have developed or are developing hardware add-ons that will turn your PDA into a GPS receiver.

One of the more interesting models is the Geode ($289) from GeoDiscovery (http://www.geodiscovery.com; 800/861-2972; 801/431-1553). The Geode is a Springboard module for the Visor. It includes space for two MMCs (Multimedia Cards) that let you store local maps and information about your surroundings. These maps, combined with GPS functionality, let you see where you are and what landmarks or businesses are nearby.

> The Geode GPS module can show you your location on any of hundreds of maps that are available free.

Nexian (http://www.nexian.com; 858/623-1544) makes another Springboard module, the HandyGPS ($149), powered by its own AAA batteries. Magellan's (http://www.magellangps.com; 408/615-5100) GPS Companion is available as a Handspring module or a clip-on peripheral for the Palm V for about $150. The GPS Companion ships with special software for either the United States or Europe, and battery life estimates are 10 hours on two AAA batteries. Rand McNally's $129 StreetFinder GPS III (http://www.randmcnally.com; 800/275-7263; 847/329-6656) and $149 StreetFinder GPS V

provide GPS functionality for the Palm III and Palm V series, respectively. The StreetFinder III comes with its own rechargeable Li-Ion (lithium-ion) battery, and the StreetFinder V runs off two AAA batteries.

Digital Music

Palm OS devices have a very lackluster sound system that works fine for alarms and other simple sounds but can't handle digital music. The ability to add new hardware, however, means you can upgrade your Palm's sound system and move those digital tunes off your PC and onto your PDA.

Although there are a few companies developing MP3 players for Palm hardware, most of the action right now is taking place on the Visor platform. Good Technology (http://www.good .com; 866/723-4663) makes one digital music module for the Visor, the SoundsGood audioplayer ($249.00) The audioplayer features 64MB of RAM that stores about an hour of high quality audio. The module sits flush with the Visor, but it doesn't have external memory so you have to connect the device to a PC to load new songs.

InnoGear (http://www.innogear .com; 877/711-6778; 408/848-2759) makes another MP3 module known as the MiniJam. The MiniJam is larger than the SoundsGood audioplayer so it will add some size to your Visor. The

unit, however, comes in either 64MB ($259) or 32MB ($199) configurations. Unlike the SoundsGood audioplayer, the MiniJam also supports external MMC cards for additional storage. This is a nice feature if you're traveling and want to listen to new songs.

PocketPyro (http://www .pocketpyro.com; 954/359-9530) is working on the Pyro For Palm, an audioplayer for Palm models. The company has not yet released its product, but information on the company's Web site indicates that the unit will have its own rechargeable battery and can play songs whether or not it's attached to a Palm.

Miscellaneous

There are a number of other hardware accessories for both the Palm and Visor. One of the coolest add-ons is the $99.95 Kodak PalmPix digital camera (http://www.kodak .com; 888/375-6325; 716/724-9977). The camera can take pictures in 24-bit color at a resolution of up to 640 x 480. This isn't great for printing, but it's perfect for posting on Web sites and sending in e-mail. You can also view images on your PDA, but you will be limited by the display of your unit. Once you've downloaded the image to

The @ctivelink module for the Handspring Visor lets you send and receive messages.

a PC, you'll be able to view it in 24-bit color. The module connects to the bottom of Palm VII and Palm III series PDAs. A separate unit is available for the Palm m100.

Not to be left out, the Visor also has a $149.95 digital camera that plugs into the Springboard slot. The eye-module (http://www.eye module.com; 650/322-1776) lets you take pictures in black and white or color at resolutions of either 160 x 120 or 320 x 240. The eye-module did have a conflict with the new 16-bit color Visor Prism when it was first released, but a new software update fixes the problem. If you need the patch, you can download it from http:// www.eyemodule.com /downloads/eyepatch.htm.

Whether it's wireless communications, GPS, or digital music, our palm-sized computers are gaining the ability to morph into a variety of handheld devices. With SD and Springboard technologies making it easier for hardware developers to support an entire line of palm-sized computers, we're likely to see even more variety over the next few years.

by Chad Denton

Mix & Match

Not all hardware add-ons are compatible with all PDAs. In addition to different interfaces, some PDAs have different physical dimensions that restrict compatibility with hardware accessories. Models, such as the Visor, provide a consistent interface regardless of the exact model (Visor, Visor Deluxe, Visor Platinum, Visor Prism). Palm, on the other hand, has no Internet hardware expansion, so accessories must clip on to the bottom or the back of the device. As a result, accessories made for Palm III series (Palm IIIxe, Palm IIIe, Palm IIIc) won't fit Palm V series units (Palm V and Palm Vx). We've listed some of the most popular hardware accessories and matched them up with the proper PDA.

	Visor	Palm III Series	Palm V Series
Wireless Communications	• Minstrel S • @ctivelink • VisorPhone	• Minstrel III	• Minstrel V
Modems	• Handspring Modem • Thinmodem	• PalmModem Connectivity Kit	• Palm V Modem
GPS	• Geode • HandyGPS	• StreetFinder GPS III	• StreetFinder GPS V • Magellan GPS Companion
MP3	• SoundsGood audioplayer • MiniJam	(none)	(none)
Digital Camera	• eyemodule	• Kodak PalmPix	(none)

Quicken 2001 Deluxe

Using The Investing Center

- **Personal Finance**
- **Beginner**
- **2001 for Win9x**

When it comes to investing, you'll find there are two types of people. The first type likes to check how his investments are performing several times each day, even if he trades infrequently. He just likes to stay up-to-date on the latest news and price quotes. The second type doesn't have the time or patience to track his investments and may not be sure what information is important if he did. He'd rather rely on his broker and his investment company to keep him updated periodically.

We don't expect to overhaul anyone's investment tracking habits, but we'll show you an easy method for accessing the investment information you want through the Investing Center in Quicken Deluxe 2001. This new feature places all of the investment information you need within the Quicken software interface, which you may already be using to track your checking account. You can find all this information elsewhere in Quicken, but the Investing Center window displays all of it in one handy location.

We'll help you make the most of the Investing Center window; then it'll be up to you as to how many times each day (or year) you check the information it contains.

The Sections

Click the Investing navigation button in the right margin (or click the Investing menu, then Investing Center) to bring up the Investing Center. Each section within offers different features.

Investing Services. The text links listed here are for specialized Quicken services, such as real-time stock quotes. Be aware that some of these Quicken services carry a fee.

Activities. If you haven't yet set up any investment accounts or any securities to track through Quicken, this is the section where you'll start. Click the New Account or New Security text links below Get Started to begin adding the investing information you
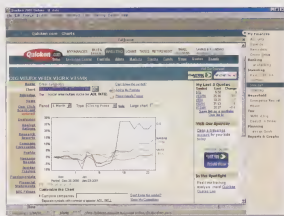
Quicken's Multiple Security Charting feature makes it easy to compare the performance of your securities.

want. You also can use the Activities section to jump to a register window for one of your investment accounts by clicking Investment Register under Enter Transactions, or you can click Update Prices (under Monitor My Holdings) to have Quicken download the latest prices for securities you own.

Before buying or selling any of your securities, you can use the links in the Activities section to perform some research, too. The Multiple Security Charting link beneath Monitor My Holdings, for example, allows you to compare the performance of one stock or mutual fund in

your portfolio to another. Other links near the bottom of the Activities section allow you to create customized charts and graphs to show the performance of your investments.

Investment Alerts. Quicken notes any breaking news (or unusual performance) regarding securities listed in your portfolio here.

Mini Portfolio. This section of the Investing Center provides the best look at the performance of your portfolio on a daily basis. Quicken lists each investment account you create in this section, along with its current value and its percentage gain or loss for the day (after you download prices from the Internet).

You can click the folder icon next to each account to check the performance of each security in the account. Click the plus sign (+) icon to see all the transactions you've entered for a particular security, then click the folder icon again to close it to view the account's performance summary. Click one of the account name text links to jump directly to that account's register window. Click on a security name text link to see details for transactions involving that individual security and to see a graph of its recent price performance.

You also can resize each column within the Mini Portfolio section by clicking on the column's border in the header row and dragging it to a new position.

Analysis. Finally, in the Analysis section, you can obtain a graphical representation of your investment performances, including asset allocation, portfolio value, and projected growth. Click any portion of a graph to see a pop-up window displaying the actual value of that portion. Double-click a graph to enlarge it, or click its text link to see a detailed representation of the graph. ∎

by Kyle Schurman

Web Browsers

Copying Data From Web Pages

- *Online*
- *Beginner*
- *Internet Explorer 5.5 & Netscape 6*

The Web is pretty to look at, but sometimes you need to get your hands on that information rather than read it and forget it. World Wide Web browsers, such as Microsoft's Internet Explorer 5.5 (IE) and Netscape 6, include a variety of commands for saving the text and pictures rolling across your screen.

Copying Text & Pictures

The most direct way to keep the information you want from a Web page is to do what you might do in any other program: use the Copy command. Like word processors and many other programs, Web browsers have an Edit menu with commands such as Cut, Copy and Paste.

In either IE5.5 or Netscape 6, select the text you want as you would in any application, highlighting it by clicking and dragging your pointer over the information in question. Next, right-click to bring up a small menu of commands. Choose Copy. Now activate your other program and use that application's Paste command.

You may find that you can't select some text because it is actually a graphic masquerading as plain old text. You won't be able to plop such text directly into other programs and manipulate it like standard text. It is still possible, however, to save it as a picture (see below).

Occasionally you may be interested in the HTML (Hypertext Markup Language) coding of a page rather than the displayed text. In IE, click the View menu, then click Source. A Notepad window appears, displaying the raw HTML behind the current page. Use Copy or Cut to pull the code into another application. Netscape has a similar command, Page Source, in its View menu.

To save pictures and other graphics from a Web page, move your pointer over the graphic and right-click. In IE, three relevant options appear. The Save Picture As command will save the graphic as its own file wherever you choose on your hard drive. If you already have another program open where you want to use the graphic, try the Copy command instead. As with text, Copy saves the graphic to the Windows Clipboard for later use in other windows. The same commands appear if you move your pointer over part of a background image (on a page that has a background), except Save Picture As is called Save Background As. Netscape displays similar right-click options with slightly different names, minus the Save Background command.

When you want to enjoy a graphic right away, skip over the Save option and head right for Set As Wallpaper in either browser. Your browser automatically saves the graphic on your hard drive in a predetermined location, and Windows displays it in the background of your Desktop. Using the Set As Wallpaper command removes your current wallpaper, but you can revert back to it by right-clicking an open spot on the Desktop, clicking Display, selecting the Background tab, and finding your favorite file.

Save As . . .

If the whole page is worth saving, either Web browser will let you copy the works onto your hard drive. In Netscape, click the File menu, click Save Page As, choose a destination for your file, and click the Save button.

IE5.5 doesn't settle at a simple save command. Clicking Save As under the File menu brings up a dialog box with four choices in the Save As Type drop-down menu. Choosing the Web Page, Complete option saves the HTML framework of the page you're
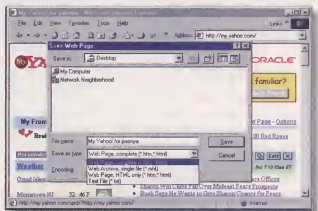
Internet Explorer 5.5 includes several options for saving Web pages to your hard drive so you can refer back to them at your leisure.

viewing in one file and the graphics of the page in a folder of the same name. A better, less complicated option for users who also have IE5 or later installed on their systems, is Web Archive, Single File. Explorer melds everything on the Web page, including the HTML framework, the graphics, and the sounds, into one file for easy management.

Users who only want the text of a page can try the Web Page, HTML Only option, or the Text File option.

Note that none of these options will save an entire Web site, just the page you're viewing. Clicking Save As again and again, however, still beats trying to remember everything. ∎

by Alan Phelps

Microsoft Excel 2000

Working More Effectively With Worksheets

- Spreadsheets
- Intermediate
- 2000 for Win9x

In April, we organized information electronically by using the multiple worksheets that are included in each Excel workbook file. We organized sales or production data by putting figures from each month on individual worksheets. Here, we'll show you how to enter data on several worksheets simultaneously and how to create 3-D references.

Copying & Pasting Data

One of the easiest ways to share information between the individual pages or worksheets is to copy and paste the data. For example, you can quickly copy headings from one worksheet to another. Highlight the data on one worksheet and click the Copy button (or press CTRL-C). Click the tab for the worksheet to which you want to copy the data. Click a cell to indicate the upper left corner of the range and click the Paste button (or CTRL-V).

Excel makes it very easy to enter identical data on several worksheets simultaneously. You can do this by grouping the worksheets before you type the data—a method that works well if you plan to use the same headings and formulas for all of the worksheets in the group. When you group worksheets, actions that you apply to one worksheet, such as entering or formatting data, apply to the entire group of worksheets. For example, you can enter months of the year for headings on one worksheet and the data is simultaneously entered on the rest. Not only can you enter data, but you can also format cells on one worksheet in a group, and the formatting carries over to the

same cells in all of the other worksheets, too.

Grouping worksheets is a snap; press CTRL while clicking the worksheet tabs for the worksheets you want to include in the group. To select multiple, adjacent worksheets, click the first tab in the group, press SHIFT, and click the last tab. You'll know that the worksheets are grouped because the tabs appear in white and the word [Group] displays in the Title bar.

After you're finished entering the data, you can ungroup the worksheets and enter dissimilar information on the individual pages, such as the sales figures for each month. To ungroup a set of worksheets, right-click any worksheet tab and click Ungroup Sheets from the shortcut menu or simply click the tabs for the worksheets.

Creating 3-D References

One of Excel's greatest strengths is its ability to compute almost anything you want, from adding simple totals to calculating complex statistical formulas. Excel knows where to find the data by the cell references you use in the formula. Much of the time you'll use cells from a single worksheet in your formulas. You can also refer to cells (or ranges) on different worksheets, which is called a 3-D reference. Not all functions work for setting up formulas with 3-D references. Some of the most popular functions, such as SUM, AVERAGE, MAX, and MIN, work well.

Here's an example of how to set up a 3-D reference. Let's take a workbook

that has individual sheets for each month's sales. You want to display the total of all the months on a Totals sheet. You can pull figures from several sheets and total them using the SUM function. Better yet, Excel automatically recalculates the totals if the underlying data on the individual worksheets change.

Click the cell where you want the formula to appear. Type an equals sign (=), the name of the function, and a left parentheses: =SUM(. Now include the cell references from multiple worksheets. Click the tab for the first worksheet you want to reference, press SHIFT, and click the tab for the last worksheet. Release the SHIFT key, then click the cell (or range) you want to use for the

Brookstone Properties

EXPENSES	
PERSONNEL	$100,000
OFFICE SPACE	$20,000
TELEPHONE	$4,386
EQUIPMENT	$10,000
MISCELLANEOUS	$2,462
TOTAL EXPENSES	$218,958
SALES	$97,363
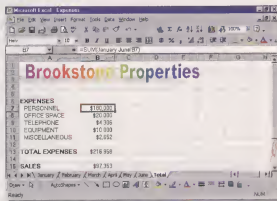
You can group worksheets and then create 3-D references.

reference. If required by the function, enter other arguments. When you're finished, press the ENTER key. The 3-D reference will include the name of the worksheets (indicated by an exclamation point). For example, typing in the following function, =SUM(January:June!B7:B11), will add the cells in range B7:B11 for January through June.

So try your hand at 3-D references with data on your worksheets, and you'll discover more of Excel's built-in efficiency. ∎

by Linda Bird

Lotus 1-2-3

Using Versions For Data Analysis

- Spreadsheets
- Intermediate
- 9.5 for Win9x

LOTUS 1-2-3's versions feature is a useful, simple tool for analyzing your data and creating what-if scenarios. It lets you take a range of sales data, for example, and create several versions of it, such as best-case, worst-case, and likely case scenarios. You can also compare how accurate your sales forecasts were by creating actual, forecast, and previous versions.

Creating Versions

Select a group of cells and highlight them by holding the left mouse button and dragging your pointer across them. Click the Range menu, point to Version, and click New Version (don't worry about your current data—Lotus automatically saves it as the Original version). Type a range name in the New Version dialog box based on the type of data you're working with, such as Payroll or Expenses. Then type a version name in the next field based on its criteria, such as Best Case. Click the checkbox next to Use Current Data For New Version to drop your original data into the current version.

Click Next or the Step 2. Options tab, then type a brief description of your new version in the Comment box. Make sure there's a check mark in the box next to Show Name And Border Around Version, or you won't be able to view and select different versions for this range. Clicking Keep Styles With Version lets you customize cell fonts, backgrounds, colors, etc. Select Protected from the Protection:

drop-down list to prevent others from changing data in the current version, or Hidden to prevent anyone from seeing it at all. Click Done when you're finished.

Keep in mind that you must configure the cells in your range properly

With Versions, you can easily create different scenarios with your data to prepare for several possible outcomes.

for protection or hiding to work. First, unprotect the cells, even if you selected Protected or Hidden. To do this, highlight the range on the worksheet after setting up your version. Click the Range menu, click Range Properties, then the Security tab (labeled with a key icon), and deselect the box for Protect Cell Contents From Changes. Second, lock your workbook to activate protection. Click File, Workbook Properties, the Security tab of the Workbook Properties dialog box, and click Lock Workbook. Now others can view all versions, but cannot make changes to protected versions or see any that you've hidden. To access your

hidden versions later, you will have to unlock the worksheet.

Once you have created a version, its range will appear inside a border with a version selector box in the upper right corner. Click this box to get a list of versions, and then click the name of the version you want to display. Enter data or format cells as you normally would, and when you save your changes 1-2-3 saves them only for the current version. When you switch to another version or change its data, 1-2-3 immediately recalculates any related formulas. To delete a version, click Range, point to Version, click Delete Version, click the desired version, and click Delete.

If you create several versions for several different ranges, you can group versions together for further analysis. For instance, say you create Best Case and Worst Case versions for your Sales and Expenses data. You could group the Worst Case versions for both sections together in order to make contingency plans or apply for that loan.

To group versions, click Range, point to Version, and click Version Groups. Click New Group, name your group, select a version from the list under Available versions, then click the right double-arrow button to add it to the Versions In Group list. Add all desired groups in this fashion, click OK, and click Done in the Version Groups dialog box. To display the version group, click the version selector box of any version that is part of this group, then select the version group from the list.

For those times you want to see your worksheet without all those version names and borders, you can hide and redisplay versions by right-clicking any cell in the version and selecting Hide/Show Version Name & Border. ▮

by Tracey Dishman Patterson

Microsoft Money 2001 Deluxe

- *Personal Finance*
- *Intermediate*
- *2001 for Win9x*

Learning About Asset Allocation

When managing your own investments, asset allocation is one of the most important aspects of keeping your money on track to meet your long-term goals while minimizing risk. However, determining your optimal asset allocation can be a difficult process, and an asset allocation model that works for your neighbor may not work for you.

Microsoft Money 2001 Deluxe can be a key tool in learning about asset allocation and then applying that knowledge to your individual investment situation. We'll show you how to use some of the software's built-in features to create an ideal, personalized asset allocation model.

Asset Allocation 101

First, a definition: Asset allocation is the placement of percentages of your investment dollars into various investment classes, including large-cap investments (stocks from the largest companies), small-cap investments, and bonds. Maintaining a position in each major investment class can help reduce risk in your investment portfolio; it would be rare to find a market environment where every investment class would simultaneously experience a downturn. Asset allocation is important for balancing risk and returns, too. If your asset allocation is too aggressive, you might risk more of your initial investment than you want. If it is too conservative, you might not achieve the types of returns you need to meet your goals. The idea is to find a middle ground that is both comfortable and sufficiently productive.

To begin using Money's built-in educational tools, click the Investing menu and Asset Allocation. Click the link to the first of six steps, Learn
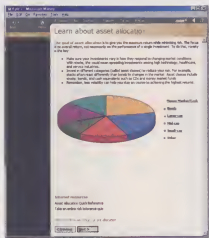
Money will give you the basic information you need to master the idea of asset allocation.

About Asset Allocation, to begin the educational tour. Click on any text link within the page to gain additional details. This page also contains an Internet Resources area, which offers links to Web sites loaded with additional information.

Putting Your Education To Use

Once you've mastered the basics of asset allocation, it's time to set up an asset allocation plan for yourself. Start by clicking the Next button at the bottom of the Education page.

On the Review Your Current Asset Allocation page, you'll see how the funds you currently have in accounts entered in Money fit into your overall allocation. (Don't worry if you haven't yet entered your investment accounts in Money; we'll cover that subject in next month's issue.) Click the Next button.

On the Determine Your Target Asset Allocation page, Money will take you through a seven-question quiz to help you determine your tolerance for risk and the asset allocation that will best meet your needs. Answer each question as accurately as possible given your current financial situation.

After taking the quiz, click the Next button once more. On the Customize Your Target Asset Allocation page, you'll see the estimate Money has made concerning the best balance between need for return and tolerance for risk. Your proximity to retirement and experience as an investor both figure prominently in this equation. If, for example, you are several years away from retirement and are a fairly experienced investor, you'll probably see a fairly aggressive target allocation. On the other hand, if you are nearing retirement and have little investment experience, you may see a more conservative target allocation.

If you have some experience with investing, you may not agree with the target asset allocation Money develops for you. (In our case, for instance, the target allocation was a little more aggressive than we expected.) You can edit this target asset allocation to match your expectations by clicking the Customize text link in the text boxes near the top of the window. Make any changes to the percentages listed in the text boxes (taking care to keep the Total at 100%) and click Apply.

If you don't agree with Money's target asset allocation but you're not a seasoned investor, you may want a second opinion from a financial advisor. If you'd rather manage your investments yourself, you may want to do some reading about investing to give yourself some additional education about asset allocation. Then try revisiting this quiz. ∎

by Kyle Schurman

Going Online

Removing Spyware With Ad-aware

• Online
• Intermediate

Your computer may be talking about you behind your back.

Unbeknownst to many users, some shareware and freeware applications downloaded from the Internet send data back to advertising companies about the Web sites you visit, the programs you use, and the hardware you own. Such information typically contains no identifying characteristics about individual users, and companies often use it to tailor the advertising banners you see while using the program or visiting certain Web sites.

Not all such advertisement-based programs are bad, of course. Advertising is what keeps many programs and Web services from having to charge fees for their use. The programs are completely legal, and many users willingly accept bargaining certain information in exchange for useful software. The problem is not everyone knows exactly what his or her end of the deal encompasses. Some programs send information without obtaining permission or even explaining what is happening. This sort of one-sided exchange prompts some users to call advertisement-based software, also known as adware, "spyware."

Hunting

A useful, free tool, courtesy of Lavasoft Sweden, seeks out and, with your approval, deletes adware from your system. To get started, head to http://www.lavasoft.de/aaw/index .html and click on the Ad-aware link in the left margin of the page. Information about the program appears on the right

along with a hyperlink for downloading its 659KB installation file. After a fast installation, look for the program shortcut in your Start menu.

Using Ad-aware is fairly straightforward. Launching the program opens an introduction window with a list of adware programs the system can track down. The software also mentions an

Ad-aware is a free program that detects and deletes advertising-based software that monitors your actions and transmits them on the sly to the advertising "mother ship."

important fact about the nature of adware: most of it won't run without the advertising component installed. As we mentioned above, if you like a program and want to use it despite its advertising qualities, deleting parts of it probably isn't the best way to keep your software happy. If you don't care how the software feels, forge ahead.

Click the Scan My System button to begin an examination of your PC. Ad-aware scans your system memory to see what's presently running, then your Registry to find evidence of adware, and finally individual folders and files. If it finds any spyware, a note will appear at the bottom of the window. You can click the Stop button at any time to cancel the scan.

After the scan, click the Show Report button to see a detailed list of suspicious files and Registry references. Click the

Continue button for more information, and Ad-aware displays a list of probable spyware files and registry values. The Name column shows which brand of advertising software is responsible for the Content listed in the last column. Chances are, if you've spent much time surfing the Web and downloading software, you'll see a few programs. Unless you know you like or need one of the programs named, check all the boxes, then click Continue to clean the spyware from your system.

Keeping Clean

Users who frequently download new programs might want to set Ad-aware to run automatically from time to time. In the main Ad-aware window, click the Configuration button. In the upper-right corner, check the options for scanning at Windows startup and automatic spyware removal. Ad-aware will quietly take care of business each day.

Another way to stay on top of the adware avalanche is to pay some money for Lavasoft's Ad-aware Plus add-on. On the Ad-aware page, look for the Ad-aware Plus link. A link in the right pane leads to a shareware site where you can buy the registered version. The Ad-aware add-on runs constantly in the background, watching for spyware attempting to install itself or make changes to the Registry. It removes any offending software automatically upon detection.

Finally, prevent problems by checking software *before* you download it with help from Spy-Checker.com (http://www.spychecker .com). This site maintains a free database where you can enter the name of a program you're interested in to see whether it has been identified as spyware. ∎

by Alan Phelps

power this triumphant

now available in a battery

Energizer e² ™
the battery with
a heart of titanium

Energizer e TITANIUM TECHNOLOGY ™

take power to the next level ™

www.energizer.com

Microsoft Word 2000

Creating & Using Footers

- **Word Processing**
- **Intermediate**
- **2000 for Win9x**

One nice feature of Microsoft Word 2000 is that you can divide a document into multiple sections, then provide each section with its own footer. Word can also make the first page of your document a title page with no footer.

Page Numbers

Footers print at the bottom of each page of a document or section in a specially reserved margin area. To create a footer with page numbers that increment automatically, launch Word, click the View menu, then click Header And Footer. Point to the Switch Between Header And Footer icon in the Header And Footer toolbar. Word positions the cursor in an outlined footer field at the bottom of the page. Click the Center button on the Formatting toolbar to center your text, then type Page and press the Spacebar. Finally, click the Insert Page Number button on the Header And Footer toolbar, and Word inserts the number 1.

If you want to set first page of your document up to be a title page with no footer, click the Page Setup button on the Header And Footer toolbar. Click the Layout tab in the Page Setup dialog box. In the Headers And Footers section, click the box to the left of Different First Page to insert a check mark. Click the OK button, and the word "Page" and its corresponding number disappear from

view. Word displays a footer on the second page of this document consisting of the word "Page" and a page number (as soon as your document has a second page).

To make your page numbers to start with number one on the second page, open your Word document (if it's not already open). Double-click in the footer area or click Header And Footer from the View menu to bring up the Header And Footer toolbar. Click the Format Page Number button, then
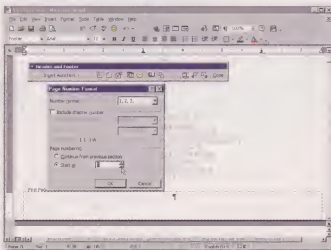
Microsoft Word 2000 has flexible page numbering options that let users create different footers for the first pages of sections or documents.

click the Start At: radio button in the Page Numbering section of the Page Number Format dialog box. Type the number 0 in the page number field, or click the down arrow to the right of the field until it appears.

Starting the page-numbering scheme from 0 rather than 1 makes your title page (the one with the footer that doesn't display) page 0. This in turn causes the footer on Page 2 of your document to read "Page 1" rather than "Page 2," and so on.

Multiple Sections

If you create a document with multiple sections, each section can have its own page numbering format. Sections can also have their own margin settings, paper size or orientation, page borders, columns, and more. This comes in handy if your document has a table of contents, preface, or introduction that you want to number with Roman numerals, plus subsequent sections that you want to number with Arabic numerals.

To create a multisection document with a unique numbering system for each section, open a multipage document (if one isn't already open). Scroll through the document until you reach the place where you want to begin a new numbering system. Point to the beginning of the line you choose, click to insert the cursor, then click the Insert menu and click Break. Click the radio button next to Next Page in the Break dialog box, then click OK, and Word repositions the text at the top of a new page.

To assign a Roman numeral numbering scheme to this section, click anywhere in the section and launch the Header And Footer toolbar. Click Switch Between Header and Footer, type Page, press the Spacebar, and click Format Page Number. In the Page Number Format dialog box, click the down arrow in the field next to Number Format: and click the Roman numerals (I, II, III, …) from the drop-down menu that appears. Click the Start At: button in the Page Numbering section, indicate the page number you want to appear on the first page of the selected section, and click OK. Repeat the instructions for creating additional section formats as needed. ∎

by Carol S. Holzberg, Ph.D.

WordPerfect 9

Create A Table Of Contents

- Word Processing
- Advanced
- 9.0 for Win9x

To organize A long document and give it a professional touch, consider adding a TOC (Table Of Contents). In it you can offer a list of chapters, sections, and/or headings that appear within the document, along with their page numbers. Generally, the TOC precedes the entire text. For a more detailed listing of where to find various references within a text, you can also provide an Index at the end of the text, but we'll talk about that next month.

If this is your first experience with a TOC, make a copy of the document you're going to use. If you decide you don't like the first results, you can start over with a fresh copy. This saves you the agony of going through Reveal Codes to delete commands associated with the TOC.

The Definition

Open the document that will contain the TOC. Insert a New Page break just below the opening titles, and before the main text. If you want the TOC to appear on an odd right page, in the Format menu go to Page, click Force Page, and choose Current Page Odd. Click Tools, Reference, Table Of Contents to open the TOC Bar. On the bar, click Define. In the Define Table Of Contents dialog box, you must set the number of outline-style levels for the TOC. Titles and subtitles, chapters with sections and subsections, or any other hierarchical setup should have an equal number of levels defined. In our example, the chapter number is level 1, the chapter title is level 2, and the chapter subtitles are level 3.

Choose a Position for the page number in each level. The drop-down list under Position reveals several styles. You can choose a different style for each level, then check the Preview box to see how they will look. By default, the page numbers in the TOC will appear in the same style as the page numbers in your document. In our example, we chose to show the chapter number and page number bottom center of each page. In our TOC, we want only the page number to align on the right margin, following leader dots.

To change the page number style, click the Page Numbering button. Choose Custom Page Numbering Format. Delete any entry in the box below and click Insert. You may select any combination from the list of items, inserting your own text in between. Click OK to each dialog box to exit.

Now, you're ready to tell WordPerfect what to put in the TOC. If you're working with a Master Document, expand the subdocuments. Reveal Codes to keep track of what you're marking. Do not include tabs, page breaks, or other format code in a marked entry. Carefully select text you wish to include in the TOC and click the Mark button on the TOC Bar that corresponds to the desired level for the text. If you make an error, remove the

Mark code from the Reveal Codes view. You don't have to mark the entire text at one time, so do a small section to try it first.

Position your cursor in front of the Table Of Contents Will Generate Here message. On the TOC Bar, click Generate. In the Generate dialog box, check Save Subdocuments to retain the code you just inserted. Click OK to expand the TOC in the format you chose. You can insert a title at the top of the TOC if desired.

You can redefine the TOC if you prefer to change formatting or page numbers for any level at any time. Click the Define button then reselect Position or Page Numbering options for each level. To change the level's typeface, size, or any other formatting, click the Styles button. In the Table Of Contents Styles box, you may choose a level and style. If you are not very familiar with the Word Perfect Styles, click Edit to change the default style for any of the levels. In the Styles Editor dialog box, you can use the Text Property Bar for a quick change or the Format menu for more extensive changes. Do not change the Description or Enter Key Inserts Style boxes at this time. Do not check the Automatic Update box. Click OK to each dialog box, then regenerate the TOC. ∎

The TOC Bar

Earth & Space

A Voyage through our Solar System

The TOC Insertion Message

Earth & Space

Table of Contents

<< Table of Contents will generate here >>

Earth & Space

Table of Contents

How The Completed TOC Looks:

CHAPTER 1
THE EARTH
    Spinning Earth's Simple-shroud
    ZOOM ZOOM CHAPTER 1
    Part 2: Strata Strobes

CHAPTER 2
THE PLANETS
    Let's Meet Our Neighbors
    ZOOM ZOOM CHAPTER 2
    Part 3: How We Know What They Look Like

CHAPTER 3
THE SOLAR SYSTEM
    One Family
    ZOOM ZOOM CHAPTER 3
    Part 3: Memoirs In The Future

We used a Master document and then inserted a New Page and Forced Page after the book title. The results of the options described in the text are shown here in a completed TOC.

by Anne Shevrin

Microsoft PowerPoint 2000

Easier Access For Macros

- *Presentations*
- *Advanced*
- *2000 for Win9x*

If you're efficiency-minded, you'll appreciate how PowerPoint's macros can put repetitive processes on a fast track. For example, you can use macros to quickly change colors for a graph, insert clip art, or change color schemes. We'll go over the basics of creating and running macros and show you how to keep them at your fingertips for use in any presentation.

Up & Running

Although the term macro scares away many people, a macro is really nothing more than a series of commands that you execute once and then play back as often as you'd like, much like making a tape recording. Your first move is to determine what actions you want to include in the macro. If you're unsure, it's wise to practice the command sequence a couple of times before actually recording the macro. When you're confident that you can execute the commands flawlessly, point to Macro on the Tools menu and then click Record New Macro. In the Record Macro dialog box, click in the Macro Name box and then enter a name to identify your macro. Optionally, you can enter the purpose for the macro in the Description text box.

Now you're ready to record. Click OK...and you're off! Using the mouse and keyboard, record the actions that you want to include in the macro. Don't worry if you accidentally record the wrong command—just stop the recording and begin again. One word of caution: While you can use the mouse to specify commands, you can't record

certain mouse movements in the presentation window, such as setting the insertion point. When you're finished working through the steps that you'd like to include in the macro, choose Tools, Macro, Stop Recording (or click
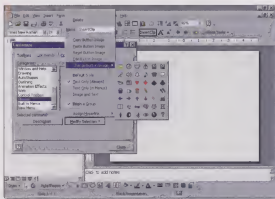
Make macros accessible by creating toolbar buttons for them.

the Stop Recording button on the Stop Recording toolbar).

After you create a macro, you can run it. First display the Macro dialog box by selecting Macro from the Tools menu and then clicking Macros (or press ALT-F8). Double-click the macro you want to run. And if you ever need to interrupt a macro before it's complete, press CTRL-BREAK (key may say PAUSE).

Finding The Macro

The biggest difficulty most people have in working with PowerPoint's macros isn't recording or running them; it's finding them. Here's the problem: When you create a macro, PowerPoint stores it only in that one presentation, not a central location that can be accessed by other presentations.

If you close the presentation with the macro, it is no longer available. To work around this, create all of your macros in a single presentation (called Macros.ppt, for instance). When you fire up PowerPoint, open this presentation and keep it open during your session. Then, whenever you want to run a macro, display the Macro dialog box and click Macros.ppt from the Macro In drop-down list. Pick the macro you want from the list.

If opening an extra presentation to access its macros sounds like too much trouble, you can create macro toolbar buttons. When you do this, your macros are available in any presentation. Just click the macro's button and the presentation with the macro opens, runs the macro, and then closes—all behind the scenes.

To add a macro button to a toolbar, open the presentation containing the macro and click Tools, Customize. Click the Commands tab, scroll down the Categories list, and click Macros. When you do, the macros you've created display on the Commands list. Drag the macro from this list to a toolbar. When a dark, black line appears indicating the location for the button, release the mouse. You'll see a new button on the toolbar with the name of your macro.

The button automatically includes the macro's name, but you can also add an icon. First, make sure the Customize dialog box is still open and the button is highlighted on the toolbar. In the Customize dialog box, click the Modify Selection button and click Change Button Image. From the displayed palette, click an icon. When you're finished adding buttons to the toolbar, close the Customize dialog box.

Gather your courage and create a few macros. You'll probably find out that they're easier (and more accessible) than you ever thought. ∎

by Linda Bird

Quick Tips

## Secrets To Succeeding In Common Tasks

Cookies

✓ DoubleClick is one of the biggest servers of online ads. If you don't like DoubleClick sneaking cookies onto your hard drive through online ads, you can "opt-out." Go to DoubleClick (http://www.doubleclick.net/us) and click the Opt-Out link. This takes you to a new page, where you can read about cookies and what opting-out means. Scroll down and click the Opt-Out Click Here link. This assigns one last cookie to your PC that tells DoubleClick's systems to keep its cookies to itself.

cheaper laser printers only come with a few megabytes of memory (sometimes as low as 2MB), and you cannot add memory to them. Additional memory means better performance, so try to find a laser printer that has room for more
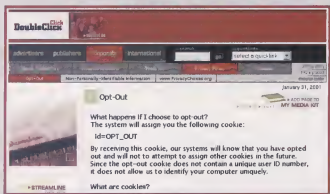
You can prevent your PC from accepting cookies from DoubleClick ad servers by opting out at DoubleClick's Web site.

Laser Printers

✓ Lately, laser printer manufacturers have released ultra low-cost black and white laser printers, some for as little as $199. That's cheap, but as with many bargains, there's a catch. Many

memory if you want to upgrade later. There are several sub-$400 laser printers to which you can add memory.

Internet Explorer 4.0

✓ When was the last time you cleaned out your temporary Internet files? This is one of those chores we know we should do every couple of

weeks, yet often overlook. If you use IE4.0, click the Tools menu and Internet Options. Click the General tab and look to the Temporary Internet Files section. Click the Delete Files button to remove the temporary Internet files from your system.

Windows Media Player 7

✓ Windows Media Player 7 plays all kinds of audio and video files, but it has to be the default player. If you *don't* want Windows Media Player to be the default player for certain kinds of files, such as MP3 files, deselect those files from the Windows Media Player list of formats. From the menu bar, click Tools and then Options. Click the Formats tab and you'll see a list of various file types, including MP3, Windows Media File, and CD tracks. Click the checkbox next to each selection to add or remove the file types that Windows Media Player will play.

Outlook

✓ Everyone knows someone who doesn't type anything in the body of an e-mail if he can pack it all into the subject line. This is fine for short missives of five or six words, but it's a serious breach of 'Netiquette to fill the subject line up to its character limit. Most of the subject line will then be

unreadable from Outlook 2000's or Outlook Express 5's preview window, forcing recipients to double-click and maximize the message to read it. A faster way to read the entire subject line from the Inbox is to hover the mouse pointer over it.

Print Cancel

✓ Some inkjets, such as Hewlett-Packard's DeskJet 932C, have a print cancel button. This little X-marked button can save you untold frustration by letting you stop an unwanted print job before it wastes your ink or paper. However, after you press it, you may need to reset a few settings before you can print again. Click the Start button, Settings, and Printers, and double-click your printer's listing. If the print job appears in the next window, right-click it and select Cancel Printing. Next, click the Document and Printer menu headings. If either has a check by Pause Printing, click it to uncheck it.

Home Networks

✓ As broadband Internet connections, such as ADSL (Asymmetric Digital Subscriber Line) and cable modems, catch on, so do home networks. A wired Ethernet LAN (local-area network) can be inexpensive, but network kits that connect computers through your existing phone jacks or power outlets are more convenient. Meanwhile, a more expensive wireless LAN can free your notebook to roam. At a top speed of 10Mbps (megabits per second) or 11Mbps, all of these are fast

enough to share a broadband connection, but consider a 100Mbps (12.5Mbps [megabytes per second]) Ethernet LAN for hard drive-like file transfers and gameplay among your PCs.

Video Cards

✓ Although most applications, such as browsers and word processors, get by with ordinary 2-D video cards, a quick look at today's games may leave you pining for a 3-D accelerated NVIDIA GeForce 2 Ultra or ATI RADEON card. Unless you have a 19-inch or larger monitor, though, you might save some money and skip the expensive 64MB cards for now. There are other factors involved, of course, but 64MB cards really come into their own at very high resolutions, such as 1,600 x 1,200 pixels, and you may not notice the difference in a 17-inch or smaller monitor. 32MB should suffice.

Outlook Express

✓ If you're using Outlook Express, it's easy to forward multiple messages to another person. Open the proper mailbox in Outlook Express to display the message in that mailbox. Hold down CTRL while clicking each message you want to forward and click the Forward button. Enter the e-mail address where you want to forward the messages, enter a subject, and include your own message if you want. When you're finished, click the Send button. The e-mail will arrive with all of the messages you included attached to your e-mail.

Internet Explorer 5

✓ It doesn't take long to compile a sizeable list of bookmarks, and moving the mouse through this maze can get a little complicated. In IE5, you can use keyboard shortcuts to help get
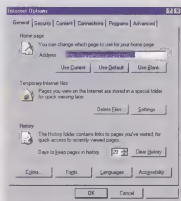
Internet Explorer users can easily clean out temporary Internet files.

where you need to go. Press ALT-A to open the Favorites menu and then press the first letter of the entry you want to select. If you have multiple entries, press the same letter to cycle through all entries beginning with that letter. You can move

through folders and sub-folders in this manner until you get where you want.

Windows 98

✓ If you use the Windows Find Files Or Folders feature a lot and you're using Windows 98 or newer, you may want to place a link on the Taskbar. To do this, click the Start button, Find, and select Files Or Folders. Type the letter for the directory you search most often (for instance, you might want to type C:\). Click File and Save Search to place a new icon on your Desktop. Drag the icon to the Quick Launch portion of the Taskbar for quick access. Do not delete the icon from the Desktop.

Internet Explorer 5

✓ You can use your mouse's right button for various IE5.0 functions instead of accessing the browser's menus. For example, right-click a page link and choose Open Up A New Window to simultaneously open a new browser window and access

the link. Choose Add To Favorites to quickly add the hyperlinked page to your Favorites menu. In addition, if you right-click a Web page's background, you can navigate the Web with the pop-up menu's Back and Forward options or choose Print or Refresh to view the most current version of the Web page.

WINDOWS Key

✓ Your keyboard's Windows key can do a lot more than access the Start menu in Win95, 98, Me, NT 4, and 2000. For example, you can press Windows-M to minimize all open application windows or SHIFT-Windows-M to maximize all application windows. Pressing Windows-E launches Windows Explorer, and the Windows-BREAK accesses the System Properties Window. You can also press the Windows-R to display the Run dialog box or the Windows-F to launch the Find: All Files (Search Results in Win2000 and Me) window. ∎

Reader Tips

Microsoft Word

✓ There is a very easy way to remove extraneous formatting (bolds, italics, paragraphs) from your text when copying and pasting in Microsoft Word. From the Edit menu, click Paste Special. In the As: field of the Paste Special dialog box, click

Unformatted Text and OK. This will strip the formatting from your copied text.

Jack Winans
Chicago, IL

CD-RW Drives

✓ As good as CeQuadrat software is, it lets you copy files, not entire folders, when you're backing

up your data. In backing up files to CD-RW (CD-rewriteable) media you can Copy and Paste. To add Send To Drive E, for instance, in Windows 98, double-click My Computer, highlight the CD-RW drive icon, click File, and Create Shortcut, which will put it on your Desktop. Then

double-click C:, open the SEND TO folder, and drag your shortcut from the Desktop into this open folder. Your File, Sent To will then give you the option of highlighting folders and sending them directly to your CD-RW.

Don Ward
Aguanga, CA

Taking Control With TweakUI

Using Microsoft's Handiest (& Most Obscure) Windows Utility
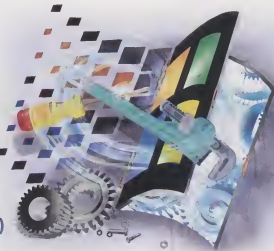
YOU MAY NOT HAVE HEARD OF IT BEFORE, but there's a Windows utility that's been out there for years that gives you precise control over scores of handy Windows features. Named for its ability to tweak Windows' user interface (hence the UI), it is the most famous of Microsoft's PowerToys, a group of utilities Microsoft programmers originally developed for internal use with Windows 95.

Microsoft's attitude towards TweakUI is an interesting one. Although the company will not accept any responsibility for its use, it makes TweakUI available for public download at its Web site. It also distributed the utility on CD-ROM copies of the original version of Windows 98.

(NOTE: Before you hunt down and start using TweakUI, you should know that it does allow you to do some rather drastic things to your Windows operating system. As we've already mentioned, it gives you indirect access to the Windows Registry, and making the wrong changes to Registry settings can have dire consequences if you don't know how to undo them. If you're a computing novice and aren't comfortable taking the health of your system into your hands, we'd recommend passing on TweakUI, or at least sticking to its more basic features for a while.)

Acquisition & Installation

Win98 users don't have far to go to locate version 1.25 of TweakUI (which, unfortunately, has some bugs); it's stored in the \TOOLS\RESKIT \POWERTOY folder of the Win98 upgrade CD-ROM. An improved and updated version (TweakUI 1.33) which also works with Win95, Win98/98SE, Windows Me, Windows NT 4.0, and Windows 2000 is available at http://www.microsoft.com/windowsme/guide /tweakui.exe.

Be sure to use the appropriate version of TweakUI for your system; don't use older, Win95-only versions of TweakUI with newer versions of Windows. Also, we'd recommend backing up your current Registry settings before installing the utility. (For more information on creating backup files, see "Cloning Your Data" on page 44 of this issue.)

Once you've found TweakUI on your Windows CD-ROM or downloaded and unzipped the self-extracting file archive from Microsoft, installing it is a snap. Open the folder containing the TweakUI files (\C: \WINDOWS\TEMP if you unzipped the download file to its default location), find a file named TweakUI.inf, right-click the file's icon, and click Install. The TweakUI installation process can take several minutes because of the many Registry changes it must perform. A progress indicator tells you how the process is proceeding. When installation reaches step 2, "Introducing TweakUI," a TweakUI Help window pops up. Close it to complete the installation.

Start Tweaking

To get started, click the Start button, point to Settings (or click the My Computer icon on your Desktop), click Control Panel, then click the TweakUI icon. The major features of TweakUI vary from version to version. In this article, we'll focus on those features supported by the Win98 CD-ROM version (v1.25). Launching TweakUI brings up a dialog box with a series of tabs along the top. Each one takes you to a different set of Windows controls.

Mouse. As you might expect, the Mouse tab offers settings you can adjust that pertain to pointing and clicking your way through Windows. The Menu Speed area lets you change how fast pop-up menus appear when you right-click items on your screen. The fields

below Mouse Sensitivity let you change your double-click and drag settings. You can also turn your mouse's scrolling wheel on or off, adjust how fast it scrolls through a page, and set your mouse to automatically go to the default dialog box setting (X-Mouse-style).

General. Clicking the General tab lets you enable or disable on-screen effects such as Smooth Scrolling, Window Animation, Beeps On Errors, and others. You can even set Windows to display its version number on your desktop for quick reference. Under Special Folders you can tell Windows where to store common program files, and the Internet Explorer area lets you choose which major search engine to use in the Internet Explorer address bar.

Explorer. Some of the features on the Explorer tab are less than critical, but they can be fun to play with. The Shortcut Overlay feature gives you several options for displaying shortcut icons, and the Startup area lets you display a Tip of the Day on startup. In the Settings portion of the tab you an adjust case of 8.3 (DOS alias) filenames, change the color of compressed files, save Explorer Window settings, and append a "Shortcut To" label to all shortcut icons.

IE 4. Versions other than 1.25 may label this tab simply "IE." It gives you access to Internet Explorer features such as enabling your Win98 Active Desktop, Detect Accidental Double-Clicks, and others. Note that if you use IE5.0 or later versions and your IE tab is labeled IE4, you shouldn't use this tab until you upgrade to the latest version of TweakUI.

Desktop. Choose from a variety of special Desktop icons that you can save as files to any folder or rename. Check-marked folders are displayed on the Desktop; if you want to hide a folder

You can camouflage what you've been up to and record computer problems with the Paranoia tab.

such as Recycle Bin or Network Neighborhood, click the box to remove its check mark and it goes away. Be careful about removing Desktop icons, as this can cause some Windows features to stop working.

My Computer. Uncheck drives you don't want displayed in your My Computer window. Be careful; this option can prevent you from using the Explore or Open commands in My Computer.

Control Panel. Add or remove both standard and third-party Control Panel icons by removing check marks or adding them next to the proper .CPL files. Don't use this option to make any changes to Control Panel unless you create a shortcut for the .CPL file first.

Network. The Network tab logs you onto any network that uses Client for Microsoft Networks automatically each time you start Windows. Keep in mind that your logon password won't be encrypted if you use this option. It also prevents you from using the Clear Last User option on the TweakUI Paranoia tab (more on this later). If you have any trust issues at home or in the office, we'd recommend skipping this option.

New. New controls which types of New documents you can create on the Desktop when you right-click and select New. As with other areas, a check mark indicates an item will appear, clearing it means it won't.

Add/Remove. This tab maintains the list of programs you can uninstall from the Add/Remove Programs dialog box in Control Panel. This is a great feature for users who have deleted a folder containing a program and found the long-lost program still displayed there. To remove an obsolete entry, click it and select Remove. To change the parameters for the uninstall option, click on a program, select Edit,

and change the description for the program or the path to its uninstaller. Use the New command to manually add a program to the list if you know the path to the uninstall program.

Boot. Boot controls startup options such as allowing and disallowing function keys such as F8 to display the Windows menu, enabling and disabling the Windows splash screen, and enabling and disabling Scandisk.

Repair. This tab fixes problems with icons, file associations, the FONTS folder, Regedit, system files, your TEMPORARY INTERNET FILES folder, and the URL HISTORY folder. Select the repair you'd like to perform, read the notes, and click the Repair button to perform the option you select. This feature can save you from resorting to the all-purpose "reinstall Windows" option.
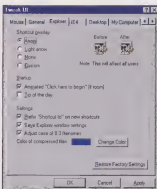
Paranoia. The most famous tab in TweakUI, the Paranoia tab performs several tasks to hide your activities from other computer users, like clearing your Internet Explorer history and Document history files each time someone logs onto your PC. Paranoia also enables and disables Windows' propensity for playing audio and data CDs automatically, and saves Illegal Operations errors to a file called Faultlog.txt.

Changing Your Mind

In many (but not all) cases, you can reverse the changes you make with TweakUI with the Restore Factory Settings button on several tabs. Before you make a change with TweakUI, take a look to see if this option is available; some menus don't have it.

Overall, the best advice we can offer regarding TweakUI is to tread lightly and avoid making any changes you don't fully understand. If you pay close attention to all its instructions and warnings, TweakUI is a great way to configure Windows just the way you want it. ▐

by Mark Edward Soper

• velocd

80 MINUTE READY

Mix your music and develop your Sweetspot for digital audio recording: www.velocd.tdk.com.

Monitor & Conserve System Resources

Protect Your System From Costly Crashes

WEINBERG'S LAW SAYS, "If builders built buildings the way that computer programmers write programs, then the first woodpecker that came along would have destroyed civilization." Other users have argued that the term "software engineer" is something of a misnomer. They point to a fundamental difference between software development and "real" engineering. You will never encounter a bridge bearing a sign that says, "WARNING: This bridge may or may not collapse when you drive across it. Have a nice day." And yet, in effect, that's what happens when you use software; rarely is the software accompanied by anything close to a real guarantee, and we're all certainly quite used to our computers locking up, crashing, or displaying what Microsoft users wryly call the BSOD (Blue Screen of Death).

Why are computers so prone to crashing? And why do we seem to expect, or at least to forgive, that sort of behavior? The answer to both questions lies in complexity. A computer program, even a relatively small one, is an extraordinarily complex thing. A large system, such as a word processor, is complicated almost beyond belief; by and large, no one person could write one of today's word processors, simply because no one person could even keep in mind, let alone understand, all of its parts. And an operating system, the very framework upon which such software applications must rest, is even more complex than that.

Consider the added complexity of two such programs, an operating system and a word processor, attempting to work together. Add to that a variety of other applications (spreadsheets, games, Internet browsers, MP3 players, virus checkers, etc.) all running at the same time and all dependent upon the (presumed) stability of the operating system. Is it any wonder that complexity compounded to that degree leads to unexplained behaviors?

So, are you completely at the mercy of out-of-control systems bent on crashing your computer? No. In fact, the problem usually results not in an immediate crash, but in a gradual degradation of your available system resources.

The crash finally comes when your system resources have been reduced so much that the system becomes unstable. That's the point at which your system locks up, the Low On System Resources message appears, or your computer simply performs a meltdown, displaying the BSOD.

So what can you do? Learn to conserve system resources and to avoid situations that tend to use them up too quickly. We'll show you how.

What Is A Resource?

In order to learn how to conserve resources, we must first define them. When computer scientists talk about system resources, they have a particular set in mind. They specifically mean regions of memory that have been set aside for keeping track of internal tasks and activities such as the ones below:

- The number, state, and location of windows currently open (or active but currently minimized)
- Certain controls (buttons, checkboxes, etc.) on those windows
- Graphical objects such as fonts, cursors, and the like

- Active COM (Communications) or LPT (line printer terminal) ports
- Continually polling any timers that might be active
- List-boxes and their contents

In addition, lay users tend to include in the definition of system resources the following:

- The portion of your hard drive used as virtual memory (sometimes called a swapfile)
- Available RAM, over and above that relegated to such housekeeping tasks as those noted above
- Available hard drive space

Although some technologists would not include the latter three items as true system resources, for the sake of simplicity, we'll do so here.

Good News, Bad News

The good news is that newer versions of Windows (Windows 95/98/2000) are much better at conserving resources (and at giving you more available resources to start with) than Windows 3.x was. For example, in Win3.11, the system could keep track of up to 299 windows; Win95 can theoretically track 32,000 windows. Although Win3.11 could keep track of only as many fonts as it could handle within a 64KB segment, Win95 can handle roughly 800 fonts. Because of such improvements in the operating system, you are much less likely, in theory, to see the BSOD in the newer versions of Windows than you were in Win3.11.

What's the bad news? Well, if you upgraded from Win3.11 to Win95 without also increasing your computer's memory, you already know the answer. The newer versions of the operating system are memory hogs. Although Win3.11 (and its applications) ran just fine on 16MB of RAM, or even 8MB or 12MB, Win95 needs at least 32MB to run efficiently. The paradox is that, although Win95 will actually run with 16MB of RAM, it will run v-e-r-y s-l-o-w-l-y. And any applications attempting to run with it will

run even more slowly. In fact, because the operating system would require almost all available RAM just to run, you're even more likely to run out of system resources than you were with Win3.11. The solution? More memory. That 32MB figure is a minimum. You're much better off with 64MB, or even 128MB. The increased memory will minimize the number of times you're confronted with the Low System Resources message, and your applications will run faster and more reliably.

Monitoring your system resources. How can you tell how your system resources are doing? Microsoft provides a utility that lets you monitor your resource use. Click the Start button, Programs, Accessories, System Tools, and System Monitor. The monitor will pop up and list your resource use in three areas: System Resources, User Resources, and GDI (Graphical Device Interface) Resources. User resources are mainly those used to track the various windows in use. GDI tracks the use of graphical objects, such as cursors, fonts, and icons.

Make sure that you're allowing Windows to manage your virtual memory.

System Resources is essentially an overall term and is always the same as the lowest of the other two. If all three are running at about 70% to 80% or more, you're fine. If any of them drop below 50%, you're beginning to run low on resources. If any drop to 20% or below, you're about to start having serious problems.

The Decline & Fall

It took Edward Gibbon 10 years to write his monumental history, "The Decline and Fall of the Roman Empire." The causes of a decline in system resources are much easier to document; they boil down to some combination of the following:

- Multiple applications are open at one time.
- You're running Win3.x programs under Win95 or higher.
- There's very little free hard drive space available.
- You had minimal memory available to begin with.
- Hidden applications or utilities are running and using up resources.
- One or more of your applications is misbehaving, eating up—and not relinquishing—memory.

Let's look briefly at each of these potential causes, and see what you can do about them.

Multiple applications. In Windows you're supposed to be able to run multiple applications, but each application eats up resources. Not only is each one a window, but also each window can be (and usually is) the "parent" of many subwindows. In addition, each window (and subwindow) probably has controls on it (buttons, menus, checkboxes, etc.), and each of those use resources, too. What's the bottom line? When in doubt, run fewer applications simultaneously.

Running Win3.x programs. Under Win95 or later, Win3.x applications are nasty little things. They may run, but they may not conform to the rules of the road as promulgated by the designers of the newer operating system. In addition, Win3.x applications are 16-bit programs, and 16-bit programs need to share resources with other 16-bit processes. Those resources are not freed up until all 16-bit applications are closed. Solution? Avoid running 16-bit applications whenever possible. If you must run them, close all of them when you need to free the maximum amount of system resources.
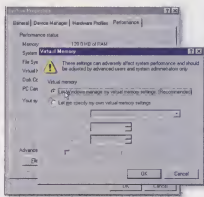
Shortage of hard drive space. In theory, hard drive space shouldn't much matter in terms of resources. After all, system resource issues are memory issues, right? Yes, but... As it turns out, when you begin running low on system resources (meaning, in this case, memory), the operating system starts using a swapfile (in this case, a piece of your hard drive) as virtual memory. This slows things down but normally doesn't cause anything to crash. However, if your drive space is limited, then the system can't use that virtual memory, and you will have problems. What to do? Make sure you have plenty of free space. Sometimes you can gain quite a bit of hard drive space merely by deleting any temporary files you may have stored. Search for *.tmp and ~.* files. You can safely delete those. And make sure you're letting Windows manage your swapfile for you: Click the Start button, Settings, and Control Panel and double-click the System icon. In the dialog box, click Performance and Virtual Memory. Click the Let Windows Manage My Virtual Memory radio button.

Minimal memory. We've already touched on this, but remember that memory is generally fairly inexpensive, and adding more of it will solve a host of problems. If you're running Windows 95/98/2000, you need at least 64MB of RAM if you want decent performance.

Hidden applications. When Windows starts up, it may load any number of mini-applications. These show up in the System Tray at the lower right corner of your monitor and may include a virus checker, a printer utility, some sort of media player(s), the Windows Task Scheduler, etc. If more

You can reduce the number of mini-applications that load when Windows starts up by deleting them from the list under Taskbar Properties.

than three or four are present, you may be eating up more resources than you realize. If there are any you don't need, turn them off. To configure your system so that they don't load up when Windows starts, follow these steps: Click the Start button, Settings, and Taskbar (or Taskbar & Start menu). In the Taskbar Properties dialog box, click the Start Menu Programs tab. Click Remove. In the Remove Shortcuts /Folders list, click the plus sign (+) next to StartUp. Select each item and click Remove.

You don't really need many of the mini-applications that run at startup; most often they are inserted by well-meaning applications when you install the main application, and it is perfectly safe to close them. You can always run them again if you decide that you really need that little RealPlayer icon in the System Tray. But don't close down your virus checker unless you absolutely have to. That's one mini-application that you really want to keep on hand.

Misbehaving applications. Well-behaved programs load up, take the amount of memory and resources they require, and relinquish those resources when you close them. However, a poorly behaved application may not free up all of the resources it was allocated. This is known as a memory leak and is not at all uncommon. Installing the latest version of (or the latest patch for) the application will often take care of this. In fact, early versions of Win95 itself had a fairly severe memory leak, especially noticeable on computers being used to access the Internet. If you're running Win95, consider going to http://www.microsoft.com and downloading the Win95 Kernel 32 Update to correct this problem.

Low System Resources message. First, don't panic when you see the Low System Resources message. Begin closing all of the applications you have running, starting with the smaller ones. Why start there? Because even closing an application momentarily uses up resources while the application does its housekeeping. So if you begin by closing the smaller ones first, you reduce the risk of causing an all-out system crash simply because you tried to close something that needs to do a lot of housekeeping.

BSOD. Forget it. You're toast. Although the message on the BSOD says to Press Any Key To Return To Windows, this almost never works. And when it does, the system may nonetheless remain unstable. Remember the famed GPF (General Protection Fault) error message so common in Win3.11? And how no one ever recovered from it? Well, this is pretty much the same thing. Just reboot the machine. (If it's really locked up, pressing CTRL-ALT-DELETE may not even work, and you may have to actually turn off the PC and restart it. Although rare, it's possible to lock up a machine so completely that the Power button no longer works, and you have to unplug it.)

Remember that the BSOD can't really hurt you, and it almost never means that there's anything permanently wrong with your computer. Just reboot and you'll usually be fine. You have been saving your data as you went along, right?

The Big Three

In the end, the things that most affect system resources are memory, disk space, and applications. Get and keep as much as you can of the first two, and be conservative about the last one. If you can do that, you may never see the dreaded "Low on System Resources" message. But if you do, at least now you'll know what to do about it. ∎

by Rod Scher
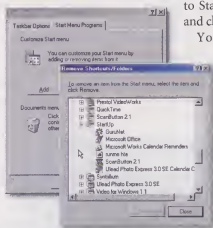
Advantages Of Disconnecting

Browsers Let You View Pages Offline

ALTHOUGH NETSCAPE AND MICROSOFT developed Web browsers as tools so you can easily view Web files, you can also use these browsers to view Web pages when you're not connected to the Internet. This may seem antithetical to the Web browser's purpose, but viewing Web pages offline has many valuable uses.

For example, you can download the Web pages and then disconnect to save connect time charges. This is especially useful when you're on the road with your notebook, and you do not want to accrue phone tolls while surfing the Web. Similarly, if you have little time to connect but a long plane ride ahead of you, you can download Web pages to your notebook to view later. If you want to display Web pages for a presentation but will not have access to an Internet connection, offline display is the way to go.

At home, you may only have one phone line, so viewing Web pages offline lets you read your favorite pages without tying up the phone line. You might download pages late at night when Internet traffic is lighter and read them the next day. Or you can download your children's favorite pages while you are online and give them access to those pages without giving them open Internet access.

With older browsers, the only way to view a Web page offline was to save the page using the File menu and Save As command. Although this worked relatively well with early Web pages that used few graphics, contemporary Web pages typically contain many images and multimedia files. When using the Save As method, the user must save each individual file in order to see the page displayed as it does online. Further complicating the

process, all of the files that appear on a Web page may not be located in the same directory on the Web server. Now the user must figure out the directory structure and re-create it on his computer. In recent years, Netscape and Microsoft have added features to their browsers that can save users some of this hassle.

Work Offline With Netscape

The Netscape 6 browser offers a somewhat time-consuming method of working offline. First, you must surf to the pages you want to view, without using the Back button. For each page you visit, the browser downloads the text and images into the cache, a short-term storage area that the browser uses to speed up download times. The browser records every page you visit in the Go menu, up to 10 pages. The Go menu acts as a recent history list of pages downloaded to the cache.

Once you have visited all of the pages you want to view offline, select Work Offline from the File menu. You can now view any of the pages in the Go menu, reconstructed from the cache's temporary files. Occasionally, you may have a problem with Netscape trying to connect to the live site. This usually happens when you have not initially downloaded all of the files, such as images, on that Web page. Make sure to allow the pages you want to view offline enough time to download completely before you move on to the next page.

Selecting Work Offline disconnects only your browser from the Internet, not your Internet connection itself. To disconnect completely, close your dial-up connection as you normally would. If you stay connected to the Internet, but choose Work Offline, all of the pages you view will come from the cache and not the Internet Web server. This might be an option for you if you want to use other Internet applications, such as e-mail, but not if you are trying to limit the time you spend connected.

Older versions of Netscape worked in a slightly different way. Netscape 4.0 had a component called Netcaster that allowed users to download specified pages and schedule regular downloads of those pages for offline viewing. Unfortunately, the Netcaster tool no longer exists in the current versions of the browser.

Synchronize With Internet Explorer

Microsoft's Internet Explorer 5.5 not only lets you download and view Web pages offline, but also it performs scheduled downloads of those pages, the same feature that Netcaster tried to deliver. Microsoft first incorporated this feature in IE4.0, at the same time it introduced channels, or Web pages that pushed content to the user. Although channels have gone by the wayside, the newer versions of IE continue to improve upon the offline viewing and scheduling abilities. IE5.5 refers to this ability as Synchronize.

To use the Synchronize Wizard, add the page you want to view offline to Favorites. Click the Favorites menu and Add To Favorites. The Add Favorite dialog box gives you a couple of choices. If the Make Available Offline checkbox is empty, click it. Click the Customize Button to expand a list of folders where you can store the page. You might want to create a new folder just for your offline content, titling it by topic, such as Financial News or even Offline Web Pages. The Customize button takes you to the wizard where you can set the link depth, schedule a time for the downloads, and provide username and password for secured, subscription-based sites. You can turn off the link depth, effectively downloading only the single page or set the depth between 1 and 3. Be careful when setting the link depth. Some sites contain dozens of links from the main page. If you set the link depth to 1, you will download all of the pages those links go to, which will take extra time and hard drive space. The scheduler lets you

synchronize only when you tell it, which is a good choice if you log into the Internet erratically, or specify a time for the browser to download the page at a daily interval.

Once you make these initial settings, you can further customize the synchronization process under Organize Favorites. Select the item from the Favorites window. The Make Available Online checkbox should be checked, which activates a Properties button. Click Properties and you can now make changes to the initial properties you set. Click the Download tab and you can decide whether to follow links outside the page's Web site, limiting the links followed to a single domain, such as http://www.smartcomputing.com, for

example. You can also limit the amount of hard drive space you allocate for a particular page. By clicking the Advanced button, you can choose what type of multimedia files you let the browser download: images, sound, video, ActiveX controls, and Java applets. You can also automate an e-mail alert telling you when a page changes.

Obviously, IE has continued to expand its offline browsing support while Netscape has pulled back. However, both could work for you if you find the need to view Web pages offline. Try these different methods to see which is easiest and works best for you. ▪

by Greg Schick

Offline Browsing Tools

There are a number of programs that enhance your ability to browse pages offline. These products can download Web pages for later viewing in the Web browser of your choice. If you have special needs, such as downloading pages from password-protected sites or scheduling for late-night hours only, you'll want to try Teleport Pro. This $39.95 shareware program is available from Tennyson Maxwell Information Systems (http://www.tenmax.com). In addition to the features listed above, Teleport Pro can retrieve Java Applets and initiate up to 10-page retrievals at once.

Software company Blue Squirrel offers two products that facilitate offline browsing: the

$69.95 Grab-A-Site (http://www.bluesquirrel.com) and the $49.95 WebWhacker. Grab-A-Site downloads individual HTML (Hypertext Markup Language) files and stores them on your hard drive. WebWhacker 2000 stores files in a database. Although Grab-A-Site is built for power with features, such as retaining a server's directory structure and command line controls, WebWhacker focuses on ease of use with a built-in scheduler and wizards to walk you through the set-up process. WebWhacker 2000 runs on Windows 95/98/NT or Mac platform, and Grab-A-Site runs only under Windows. Both products are available with limited functionality for a free 30-day trial period.

Some software was created for different purposes but includes the ability to download and view Web pages with a browser plug-in. Most users are familiar with the full-featured $249 Adobe Acrobat 4.0 (http://www.adobe.com), which is the tool you would use to create PDF (Portable Document Format) documents. And you'd use the Acrobat Reader plug-in to view the files. Acrobat 4.0 can also import Web pages or entire Web sites and convert them to PDF. The $79 Acrobat Business Tools (http://www.adobe.com) is a cheaper package that imports Web pages, though it does not let you create PDF files. ▪

Load Multiple Browsers On One PC

How To Make Them Share

INTERNET EXPLORER. NETSCAPE Navigator. Opera. How many browsers do you have on your PC? The easy answer is Internet Explorer. Every Windows PC sports some version of the world's most popular browser. However, if you run AOL, there's a stripped down version of IE on your PC. If your PC is more than three years old, you may also have some version of Netscape Navigator. At one time, just about every software application that used the Web automatically slapped a browser on your hard drive.

So there you have three browsers, which doesn't take into account different versions, such as Netscape 4.x and 6.x (the company skipped 5.x) and IE4.x and 5x; corrupt, incomplete, or orphan installs; or the possibility of the many alternative Web browsers, such as Opera (http://www.opera.com).

Why would anyone have more than one browser on his desktop? There are several good reasons. Some browsers are better at certain activities than others. You might feel more comfortable using one program's Web browser but another's e-mail software. Maybe your spouse prefers one browser and you use another. Maybe your ISP's (Internet service provider) software automatically installed Navigator, and you've never had a reason to try IE.

According to February 2001 statistics at WebSnapshot.com (http://www.websnapshot.com), nearly 84% of all Web surfers use IE compared to less than 10% for Netscape and less than 7% for AOL, Opera, and all other browsers.

For Webmasters who create Web pages, ensuring they work with various browsers is essential.

The problem is: When browsers get together they behave like two year-old children whose favorite words are, "No!" and "Mine!" Each fights for attention and demands to be your favorite. They hate to share. They call the same features (bookmarks /favorites) by different names. And, each loves throwing tantrums. What's a patient PC parent to do? Simply follow our browser-rearing advice.

Who's The Boss?

If you have more than one browser on your desktop, juggling multiple sets of bookmarks, address books, passwords, and cookies can quickly become time consuming, confusing, and ultimately overwhelming.

For example, whenever you install a Web browser, it asks to become your default browser, browser-speak for, "I want to be the boss and automatically handle all of your browsing needs." Like The Terminator, every time you fire up the browser, it will not stop asking the question until you make a Yes or No decision. What if, however, after using one browser for a while, you want to put another browser in charge? You can change your mind, but it's much easier to do so in IE and the latest version of Navigator.

Internet Explorer. In IE5.x, click the Tools menu, Internet Options, and click the Programs tab. Put a check mark in the Internet Explorer Should Check To See Whether It Is The Default Browser checkbox and click OK. Close the browser and reopen it. *Shazam!* IE will again ask you to let it be the default browser. In IE3.x and 4.x, click the View menu and Internet Options and follow the same instructions.

Netscape Navigator. Considering how difficult it was to change the default in previous versions of Netscape, version 6.0 is a snap, as long as you know where to look and how to circumvent a pesky program peccadillo. In 6.0, click Edit, select Preferences, click Advance, scroll down and click Desktop Integration. To the right, check or uncheck the box next to Check That Windows Is Set Up To Match These Preferences Each Time Netscape 6 Starts Up. If you don't see this option, don't panic. Use your mouse to resize and enlarge the Desktop Integration window. The first wave of Netscape 6 shipped with a bug that affects the autosizing of this window. Engineers are aware of the problem, and it will be fixed in the next update. And incidentally, you should periodically check for browser updates (click the Tasks menu and SmartUpdate–Netscape 6).

The process in versions 3.x and 4.x is so complicated it makes you wonder whether the browser really wants to be in charge. First, open IE and, following the steps from the previous tip, uncheck the box next to Internet Explorer Should Check To See Whether It Is The

Default Browser. Restarting Navigator should summon the default browser query, but don't count on it. If it doesn't, you'll need a text editor, such Notepad, to edit the Prefs.js file. Close Navigator and click the Start button, Programs, Accessories, and Notepad. When Notepad opens, click File and Open, then click the Down arrow next to Files Of Type and select All Files (*.*). Look in C:\PROGRAM FILES \NETSCAPE\USERS\yourname (where "yourname" is your Windows user name) for the Prefs.js file. Open the file in Notepad and look for this line:

user_pref("browser.wfe .ignore_ def_check", true);

Carefully, type false after deleting the word "true." Save your changes, click Exit, and restart Navigator. When the default query appears, you can give Navigator the top spot.

Opera. Open the browser and from the menu bar click File, Preferences and Default Browser. Now click the protocols and file types you want associated with Opera. For example, to engage Opera as your default Web browser, check the box next to Http and click OK.

For best results, always reboot your system to activate or reactivate default status in any browser.

Sharing Bookmarks & Favorites

If you're using more than one PC or browser, there are several ways you can share Bookmarks or Favorites. However, before trying our tricks, protect yourself by making copies of your Favorites or Bookmarks. In IE, search for the Favorites folder (generally, it's in C:\WINDOWS\FAVORITES) and copy it to a floppy diskette. In Netscape or Opera, open Windows Explorer, search for Bookmark.htm, and copy the file to a floppy.

Favorites to Bookmarks. Moving IE Favorites to Netscape 6's Bookmarks is a pleasure. On the menu, click Bookmarks, scroll down, and click Import IE

Favorites. Netscape automatically imports of your Favorites. Once imported, you can drag the saved sites to appropriate folders or create new ones. Unlike IE, Netscape lets you create different user profiles and attach them to
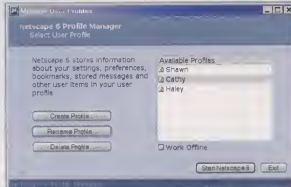
Unlike Internet Explorer, in Netscape 6, a Profile Manager lets multiple users share one browser, creating customized bookmarks, stored messages, and other settings.

the browser. Not only can multiple people use the same browser, but also they can customize settings without affecting other users. In Netscape 6, click Profile Manager and Create Profile to customize preferences, bookmarks, stored messages, and other items.

If you're using an older version of Netscape, importing Favorites takes a bit more noodling. Open IE, click File, Import And Export, and when the Import/Export Wizard Appears, click Next. Click Export Favorites, Next, the Folder you want to export. Again, click Next and select the file location, and click Finish. You can use this same application to import Bookmarks from Netscape and turn them into IE Favorites. Open Netscape 3.x or 4.x and click the Bookmarks drop-down menu. Click File and Import and you'll be prompted to browse for the location of the bookmark file. Open the file and your Favorites will be saved in Netscape's Bookmarks menu.

Remember, this process merely shuttles URLs (uniform resource locators) between browsers. You're responsible for the tedious housekeeping chores of updating and synchronizing. If you'd like to delegate this job, there are several third-party Internet bookmark utilities

that synchronize saved URLs. QuikLink Interactive (http://www.quiklinks.com) uses a familiar Windows Explorer-like interface to import, swap, and save bookmarks from Navigator, IE, and Opera to a centralized database. Saving one bookmark automatically makes it accessible from any browser. The free version organizes bookmarks in one browser; for multiple browsers, you'll need either the $20 Standard Edition or $40 Gold Edition.

Compass ($25; http://www .softgauge.com/compass) is a powerful bookmark and favorites manager that works with Netscape Navigator, IE, and Opera. You can organize, edit, view, color-code, and drag and drop your Bookmarks and Favorites into other Favorites' or Bookmarks' locations. For more choices, search download sites, such as Tucows (http://www.tucows.com).

AOL's browser. It's funny; although AOL ships with a version of IE and the company owns Netscape Navigator, the content service provider has never been known for its browsing capability. The new AOL 6.0 still integrates a version of IE, but don't expect it to behave like the model on your Desktop.

It's easy to use inside AOL, but AOL's Favorite Places list can't be used with or exported to stand-alone browsers. If you want to transfer your AOL Favorite Places to an outside browser, you'll need to e-mail the list to yourself, click the link to launch your default browser, and then bookmark it.

Try bypassing AOL's browser and running either IE or Netscape on top of AOL. No matter which browser you work in alongside the service, you still have to use AOL for e-mail and newsgroups, unless you have a separate Internet connection and mail program.

Although no browser is perfect, working with several can give you the best of all virtual worlds, as long as you train your browsers to get along and help each other out. ∎

by Michael Cahlin

The Great Outdoors

Backpacker.com
http://www.backpacker.com

True backpackers have a very different definition of the word "hike" than weekend campers at the local lake. If you enjoy loading up a backpack and exploring the wilderness, Backpackers.com is an excellent resource. The site contains feature articles describing some of the best destinations in the United States. You can find more information about each destination in the site's database. You'll also find information about gear ranging from apparel to water filters. The Technique section provides basic information about health, nutrition, and other backpacking-related issues.

Geocaching
http://www.geocaching.com

There's no end to what games imaginative people may play with technology. GPS (Global Positioning System) receivers use satellites to triangulate your exact position and provide you with latitude and longitude readings. Geocaching lets you track down hidden treasure (called caches or stashes), using a GPS receiver. The treasure can be anything from a simple logbook to cash. The official Geocaching home page provides plenty of background information if you're new to geocaching. The site also lists information about caches across the country. You can input your ZIP code or a state and city to find the nearest cache in Geocache's database. If you'd rather hide a cache, you can list it with Geocache so that other hunters can search for it.

Great Outdoor Recreation Pages
http://www.gorp.com

No matter what you're into, whether it's hiking, bicycling, canoeing, or fishing, you can find information about it on GORP (Great Outdoor Recreation Pages). GORP lets you search for an activity by location or type. If you want to stay close to home, you can see what activities your state has to offer. If you're an avid hiker, angler, or bicycler, you might not care how far you have to go as long as the activity is top-notch. Either way, GORP can help you plan your ideal active vacation.

Kick!
http://www.kicksports.com

Perhaps the simplest of outdoor activities is running. The only real necessities are a good pair of shoes and ample time. Kick! provides online resources for runners. The free online Running Log lets you keep track of your training online while the New Runner section provides basic information for less experienced runners. The site has a number of training tips, as well as a calendar of major races in the United States. Naturally, you can also find an online discussion forum where you can ask questions of more experienced runners or simply share your experiences with others online.

MTBONLINE.net
http://www.mtbonline.net

Mountain biking can be a rough sport. With the wide range of obstacles you'll encounter, you need all the help you can get. MTBONLINE.net provides excellent instructional articles that can help you gain more confidence on the trails. The site also gives instructions to help new users master a variety of tricks from the simple pedal kick, to more advanced tricks, such as the coaster wheelie. You'll also find information about

proper technique along with health and training information.

Rodale's Scuba Diving
http://www.scubadiving.com

There's more to this world than four legged animals and hiking over rough terrain, but if you want to see it for yourself, you'll need to slide inside a wet suit and learn to scuba dive. Rodale's Scuba Diving offers scuba-related news and reviews of scuba gear. Perhaps most important, the site offers information about popular scuba destinations. The Training & Safety section features training articles and medical information. If you're new to scuba diving, take a leap to the NewDiver.com link.

The Ultimate Bass Fishing Resource Guide
http://www.bassresource.com

There's nothing better than feeling the hit of a big bass and nothing more frustrating than sitting in a boat for six hours catching nothing but a sunburn. The Ultimate Bass Fishing Resource Guide is loaded with information for anglers of all skill levels and can help you make the most out of each trip. The site includes feature articles that provide information about seasonal fishing or using specific lures. The Tips And Tactics section provides plenty of additional quick tips. Catching more fish naturally leads to telling more fish stories, and the Bass Talk section is the perfect place to tell your tale or ask questions. ∎

Quick Fixes

Most software can benefit from a few updates, patches, and add-ons downloaded from the Internet. This month, we focus on driver updates for Web cameras.

Creative WebCam GO Plus Drivers

This update is for WebCam GO Plus users only. It's compatible with Windows 98, 2000, and Me.
http://webcam.creative.com/support/drivers

Creative Video Blaster WebCam

This new release provides fixes for corrupted video captured from AVI clips and provides better support for non-MMX systems. This driver is compatible with Win98, 2000, and Me.
http://webcam.creative.com/support/drivers

Logitech QuickCam 5.4.3

If you have a Logitech WebCam Pro 3000, QuickCam Web, QuickCam Express, or QuickCam Home Web camera and are running WinMe, take note. This Logitech adds support for WinMe.
http://www.logitech.com/cf/support/quickcamfiles.cfm

That's News To You

Finding the appropriate Usenet discussion group to match your interests can be a monumental task. So each month, we scour the tens of thousands of newsgroups out there and highlight the newsgroups that delve into popular topics. If your ISP (Internet service provider) doesn't carry these groups, ask it to add the groups to its list. This month we focus on astronomy-oriented groups.

sci.astro.seti. Want to join the search for extraterrestrial life? SETI's (Search For Extraterrestrial Intelligence) SETI @Home project lets Internet users download data and crunch numbers while their computers are idle. This newsgroup provides a place for SETI@Home users to talk about the project and ask questions.

sci.astro.ameature. This group is the perfect place for new stargazers to meet, ask questions, and exchange ideas. Find out what telescopes are the best and even find tips for balancing amateur astronomy with your social life.

Camouflage lets you embed personal files in other Windows files, including EXE files.

Share The Wares

Some of the best apples in the online orchard are the free (or free to try) programs available for download. Each month we feature highlights from our pickings.

Camouflage 1.0.4

http://www.camouflage.freeserve.co.uk
Camouflage provides an ingenious way to hide personal files. It copies a standard file, such as a log, DLL (dynamic-link library), or EXE (executable) file, and embeds your personal files. The resulting file looks and acts like the original and provides no hint (other than file size) that it contains hidden files. If you embed files in an EXE file, the EXE continues to run the associated application as it did in the past. To camouflage a file, highlight and right-click the files you want to embed and select Camouflage from the pop-up menu (disable Camouflage to keep the command from appearing when others are using your PC). Choose a file to embed your personal files in and select a location for the resulting file. You cannot save a file with the same name as any of the files you're using, but you can replace the file after the process is complete. Enter a password and click Finish to create the new file. You'll have to manually delete the file you want to keep private. Camouflage is free to use and works with Win95, 98, NT, 2000, and Me.

Grabit 1.31

Newsgroups are public forums, and some let users trade images or sound files. Hunting down files can be time consuming and difficult. When you designate newsgroups, GrabIt (http://www.shemes.com/grabit) automatically searches for binary files and saves them to your hard drive. The software is easy to configure; click the Configuration tab in the main window and enter the name of your news server (ask your ISP if you don't know), your username, and password. Choose what kind of binary files you want to download and click Get New Listings to download newsgroups available from your ISP. Once you've downloaded the list, click the Command Center tab and place a check next to each newsgroup you want to download binaries from. You can't control what binaries you download from specific newsgroups, so you may, for instance, download a few MP3 files you don't want on your PC. Despite the Registration button, Grab It! is listed as freeware and is free to use. It requires Win95 or later. ∎
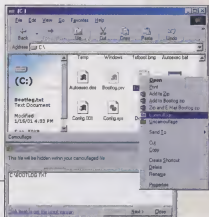
Everything In Its Place

STORAGE IS KING. No computer can do anything without data, and data needs somewhere to stay. A digital camera might as well not exist if its photographs evaporated as soon as the user shut it off. And there would be no World Wide Web without the gazillions of online servers storing petabytes of Web pages, movie trailers, and music files.

Fortunately, there are scads of methods for saving your digital data. We've collected many of the storage media choices available to you along with their ballpark prices, estimates of how much they cost per megabyte, and what makes them suitable for their tasks.

Note that this list isn't exhaustive (See "Traveling Light" from Smart Computing, April 2001, Vol. 12, Issue 4, for information

on storage options for portable devices). Also, you should be aware that some storage formats cross categories, and can work with any of the devices below. Finally, you might not care what storage device you have in your hand if your system has an Internet connection. Most computers can store data on someone else's server through online storage providers such as Driveway.com (http://www.driveway.com).

Desktops

A desktop PC is the Mecca of all storage options. You can find internal or external drives for almost any magnetic disk, optical disc, tape, or solid-state memory card. Besides those listed here, future offerings may include Constellation 3D's 100GB FMD (Fluorescent Multilayer Drive) optical discs, Sony's 40GB UDO (Ultra Density Optical) cartridge late next year, and eventually magnetic memory modules. Even more intriguing is Panasonic's newly announced FD32MB USB (Universal Serial Bus) drive, which in addition to using 120MB and 240MB SuperDisks, can store up to 32MB on a common 1.44MB floppy diskette. (Drive prices listed below are for internal models; external versions are typically more expensive.)

Hard Drive

Drives: 10.2GB ($90), 20.5GB ($115), up to 180GB ($2,195), or about .6 to 1.2 cents per MB.

These sealed drives store data on aluminum or glass disks. EIDE (Enhanced Integrated Device Electronics) hard drives are spacious, fast, and cost-effective.

CD-ROM

Media: 650 to 700MB (about $10 to $50 prerecorded with software), or about 1.4 to 7.7 cents per MB.

Drives: 48X for $54, 72X for $95.

Almost every piece of software comes on CD-ROM, the most important storage medium next to the hard drive.

Tape

Media: Travan 5GB (compressed capacity; $27) to 20GB ($42), or about .2 to .5 cents per MB; many other formats available.

Drives: Travan 8GB ($185 or $380) to 20GB ($240 to $460).

Tape drives provide huge, cheap storage for your data. Most are slow, but you can rely on quality units for backup. IBM's 3580 drive ($8,325) is an example of the new enterprise-class 200GB (compressed) LTO (Linear Tape-Open) Ultrium format.

CD-R/CD-RW

Media: 650MB to 700MB (about 50 cents to $2), or about .1 to .3 cents per MB.

Drives: 4X write/4X rewrite/32X read for $90, 16X/10X/40X for $265.

CD-Rs (CD-recordables) can work in most CD-ROM drives and audio CD players, although CD-RWs (CD-rewriteables) play in fewer drives. Larger CD-Rs (865MB) are available, but have limited compatibility.

MO

Media: 230MB ($12), 640MB ($10 to $17), up to 9.1GB ($99); about 2 to 5 cents per MB.

Drives: 640MB ($260) to 5.2GB ($2,160).

MO (magneto-optical) disks cost more than CD-Rs, but are faster and more durable. Cartridges come with either 3.5- or 5.25-inch disks inside. MO is a popular choice for business backups.

Notebooks

Portable computers by nature have limited storage choices, although they can use many of the same types of internal and external devices as desktops.

PC Card Devices

You'll find most PC Card slots, also known as PCMCIA (Personal Computer Memory Card International Association) card slots, in portable computers, although a few other devices such as Epson's 875DC inkjet ($179) and the Digital Wallet also have them.

Hard Drive

260MB ($210) to 2GB ($499), or about 25 to 81 cents per MB. Relatively fragile in PC Card form, but low cost per MB.

Flash ATA Memory Card

8MB ($39) to 1.2GB ($3,760), or about $3.13 to $4.88 per MB (some medium sizes sell for as little as $1.77 per MB). Tough but expensive add-on storage.

Notebook Hard Drive

4GB ($170 to $386) to 30GB ($786 to $966), or about 26 to 97 cents per MB. Hitachi's 10GB DK23BA-10 ($130) and 20GB DK23BA-20 ($250) drives are relatively economical (1.3 cents per MB).

PocketZip

Media: 40MB ($10 to $15), or about 25 to 38 cents per MB.
PC Card drive: $100.
Iomega's Clik! was ahead of its time. Sensing this, Iomega rechristened it the PocketZip.

DVD-RAM

Media: 2.6GB ($20 to $25) to 9.4GB ($58), or about .6 to 1 cent per MB.
Drives: 1X ($370) to 2X ($445).
DVD-RAM still hasn't caught on, probably because CD-Rs are cheap, universal, and "big enough" for most users. Also, with competing formats such as DVD-RW, DVD/RW, and the long-awaited DVD+RW, many consumers are afraid to invest in the wrong technology.

ORB

Media: 2.2GB for $27 to $30, or about 1.2 to 1.4 cents per MB.
Drives: $150 to $160.
The 2.2GB video-capable ORB disk whips Iomega's best for now, and costs a third to a quarter of 2GB Jaz disks' prices.

SuperDisk

Media: 120MB ($10 to $13), or about 8 to 11 cents per MB.
Drives: $105.
Slow but slightly bigger than a Zip 100MB, SuperDisk drives can also read your 1.44MB diskettes. Seems to be fading from the scene.

DVD-ROM (DVD-Video)

Media: 4.7GB to 9.4GB (about $15 to $30 prerecorded with movies), or about .3 to .6 cents per MB.
Drives: 8X ($62) to 16X ($95).
DVDs (digital versatile discs) look like CDs, but can store entire movies along with surround sound and extra features. Upcoming variations include the DVD-Audio format and 17GB discs.

Iomega Products

100MB and 250MB Zip
Media: 100MB ($10) or 250MB ($12 to $20), or about 5 to 10 cents per MB.
Drives: 100MB ($100) or 250MB ($170).
1GB and 2GB Jaz
Media: 1GB ($90 to $100) or 2GB ($100 to $125), or about 5 to 10 cents per MB.
Drives: 2GB ($275).
The trusty Zip disk is everywhere, but by today's standards it's slow and expensive per megabyte. Keep an eye out for Iomega's Peerless drive ($249), which will use cartridges with hard drive innards to reach capacities up to 20GB ($199; 1 cent per MB).

Other

Stylish gadgets such as the 6GB Digital Wallet ($500; 8 cents per MB) hard drive and the 16MB ($70) to 64MB ($200) solid-state Q Drive ($3.13 to $4.38 per MB) put the "cool" in "cold storage."

Floppy Diskette

Media: 1.44MB (30 to 50 cents), or about 21 to 35 cents per MB.
Drives: $17 to 25.
Small, slow, and unreliable, but millions still use them every day.

Need help with your hardware or software?
Looking for simple explanations on technical subjects?
Send us your questions!

Windows 95/98:

Q: *How can I check to find out how much memory space I have? When I purchased my new system last year it came with 32MB. I'd like to install AOL 6.0, but I'd like to be able to determine beforehand whether I have enough space.*

A: First, you're confusing the amount of RAM (system memory) you have with how much storage space you have left on your hard drive, a common misconception. It's true that either can be a limiting factor where installing and running new applications are concerned, but they are quite different.

Think of your 32MB of RAM as a scratch pad that the programs you run need to store information temporarily while they perform their tasks. Typically a program's manual or box will specify both a minimum amount of RAM it requires to run, and a recommended amount that will help it run faster and more smoothly. Hard drive space, on the other hand, is the space on the surface of your PC's hard drive where it stores the whole program, even when it isn't running or active in any way. As such, PCs need considerably more hard drive space than RAM. Newer PCs often come with 32MB to 128MB of RAM, compared with hard drives ranging from 6GB to 80GB (or roughly 80,000MB).

AOL's version 6 software requires a minimum of 16MB of RAM to run, and the company recommends having 32MB, so you're in good shape there. It also occupies about 120MB of hard drive space. To check how much available drive space you have, click the My Computer icon on your Windows Desktop. You should see an icon representing your hard drive (usually labeled "C:") in the My Computer window that appears. Right-click on it, then click Properties. The Properties dialog box will tell you how much of your hard drive is currently in use and how much you have left.

As with most programs, when you begin installing AOL 6.0 it will check for the available hard drive space it needs, and will either refuse to complete installation and/or warn you if it detects insufficient disk space. That's simple enough, but there are a couple things you should keep in mind. First, you may experience problems installing the software if you have just enough space for installation to proceed. Windows needs to have a certain amount of free space on the drive (for swap files and various other uses), or it starts to act very cranky; we hesitate to let our available drive space ever drop below 100MB.

Second, for folks already running an earlier version of AOL: if AOL reports insufficient space to install there's still hope. The earlier versions themselves are already taking up considerable hard drive space (80MB for version 4 and about 120MB for version 5), and AOL's software installs itself next to, not over, the older files. In most cases there's no reason to keep the older copy around, so you can usually free up disk space for the new version by deleting the old one. Before doing so, however, it's wise to contact AOL and find out how to get your e-mail addresses and any stored mail from your old files so you can use them with 6.0.

Q: *On the right side of my Windows 98 Taskbar there's a clock, a speaker icon, and an icon for my antivirus software. On the left side, just to the right of the Start button, I have several tiny icons for Outlook Express, and Internet Explorer, Real Player, and AOL. How can I remove them if I want to, and are these items using system resources or perhaps operating in the background?*

A: The area you refer to on the right of the Windows 98 Taskbar is called the System Tray. Typically items in the System Tray are indeed operating in the background, although they usually don't use much in the way of system resources. These can be difficult to remove and the removal of each can be different; try clicking or right-clicking each and see if they offer options to disable themselves. Also, look in your Windows STARTUP folder for icons representing programs that launch automatically each time you start Windows, some of which reside in the System Tray.

To find STARTUP, click the My Computer icon on your Desktop, click the icon representing your hard drive (often labeled "C:"), click the WINDOWS folder, click START MENU, click PROGRAMS, and then STARTUP. The process may be different if you use Windows NT 4.0 or Windows 2000, but in either case if you have trouble finding the folder you can use Win98's Find function (called Search in Win2000 and WinMe). Click the Start button, point to Find, click Files Or Folders, type StartUp in the text field, and click Find Now.

Windows refers to the area you mention on the left side of the Taskbar as the Quick Launch toolbar (Windows lets you move this to just about any part of the Taskbar you want to, so it might not always be on the left). The icons you see there are simply tiny shortcuts for commonly used applications. They're no different than shortcuts on your desktop which launch programs; until the program is running, neither the shortcut nor the program it represents use any memory, CPU power, or other system resources.

If you want to remove any icon there for cosmetic reasons, just right-click it and select Delete or Exit (depending on the application) from the resulting pop-up menu. You can also get rid of the Quick Launch toolbar altogether by right-clicking the Taskbar, pointing to Toolbars, and clicking Quick Launch to remove the check mark next to it. Keep in mind that deleting a shortcut icon doesn't delete the program's files from your hard drive; removing it without uninstalling the program is like removing an elevator button from a hotel lobby and thinking the elevator is gone.

Windows 2000:

Q: *I recently upgraded from Win98 to Windows 2000. My Win98 used to have a multipurpose file viewer called Quick View that appeared on the pop-up menu when I would right-click on filenames. I found it to be rather useful at times, but now I can't find it. Does Win2000 have Quick View, and if so, where can I find it?*

A: Quick View is nice because it does allow you to view (although not edit) a wide variety of file types without owning a bunch of different programs or file converters. You can also use it to avoid infecting your computer with a virus. If you use it to view a file you suspect of containing a virus, it doesn't automatically activate the nefarious code the way an e-mail or word processor program might.

Unfortunately, however, Win2000 doesn't come with Quick View or any feature with similar abilities. If you're determined and somewhat clever, you might be tempted to copy the Quick View program file (it's called Quikview.exe, and you can find it in a Win98 PC's WINDOWS\SYSTEMVIEWERS folder) from a Win98 PC and move it and move it to your Win2000 system. We are and we did, but it wasn't compatible with Win2000 and wouldn't run.

The good news is that there are other utilities you can get that do essentially the same thing Quick View

does. If you visit a Web search engine that allows Boolean operations (AND, OR, NOT, etc.) and enter something like "file viewer NEAR (shareware or freeware) AND 2000", you'll find a plethora of viewers that work with Win2000.

In fact, there's a free one you can find at http://www.ontrack.com/freesoftware called Quick View just like the original. And although Ontrack's excellent program ZipMagic (http://www.ontrack.com/zipmagic) isn't primarily a viewer, it will let you view more than 200 file types. Then there's Quick View Plus from Jasc Software (www.jasc.com), which does a lot more than your Win98 Quick View could. It'll view over 200 file types including e-mail attachments, let you compress (or "zip") files, and let you cut and paste text to and from them.

Computer Hardware:

Q: *I've got the power management features in my BIOS disabled, and I set my system to put itself in suspend mode once it has been idle for 15 minutes in Control Panel's Power Options Properties dialog box. Lately, about three times a month my PC comes to life by itself after having suspended normally. Do I have ghosts?*

A: You probably don't have ghosts. A more likely explanation is that there is a network card or modem waking your computer up. Some computers are configured at the BIOS (Basic Input/Output System) level to wake up from sleep mode or even to turn themselves on in the event that their network cards or modems detect communications activity. This makes sense because some users would like to be able to dial into their computers from remote sites and have them respond when needed. Also, if you're using a PC on a network and need to access a computer that's on another floor of the building, you don't want to have to go upstairs and turn it on manually.

Although your modem and network adapter probably aren't actually receiving communications data, they may be sending false wakeup calls to your computer. The BIOS setting screens may be configured to wake the system up in the event of PMEs (power management events) or to power up for LAN (local-area network) activity. You may find these features on a submenu called Boot (keep in mind that BIOS commands and menus vary depending on what type and version your PC has). Set them all to Stay Off (to ignore all communications stimuli), and chances are that'll cure the problem.

If you're intensely curious to diagnose the problem, you can turn each setting back on one at a

time and observe the results to find out which one cured your problem. If you're still not sure, you could start pulling adapter cards out and see which is the culprit, but unless you want to use one or more of these advanced power settings, it probably isn't worth the extra hassle.

Online Communications:

Q: *I was wondering about the value of incorporating an inexpensive router to a home office DSL connection to add firewall protection, even though I don't need the router for sharing one Internet connection between two computers. What are the pros and cons?*

A: Unless you have zero concerns about security, if you have an always-on connection, a firewall (software or hardware that limits access from outside a network or through an Internet connection) is a good idea. Home and small office implementations of DSL (Digital Subscriber Line) or cable Internet access usually provide little or nothing in the way of security provisions from the ISP's end of the system. At best, if you ask, you might get a comment such as "Get a firewall," or "Disable file sharing" (despite the fact that if you disable file sharing, you effectively negate your ability to share your connection among multiple PCs).

Many folks use software firewall products such as Zone Labs' ZoneAlarm, but hardware firewalls like simple network routers are generally less corruptible and easier to get running. People use DSL or cable routers primarily to allow several computers to share one high-speed Internet connection, but many of them also provide firewall protection. Rapidly increasing numbers of personal always-on Internet connections and growing concerns about security lead more users every day to conclude that firewalls aren't just for professional use.

The increase of broadband users who want to install hardware firewalls has prompted makers of small cable/DSL routers to make even smaller and more affordable boxes, such as the Linksys EtherFast 1-Port Cable/DSL Router ($95; 800/546-5797; 949/261-1288; http://www.linksys.com) and Allied Telesyn's AT-AR220E router ($125; 800/424-4284; 425/487-8880; http://www.alliedtelesyn.com). Such devices provide solid firewall protection without the costly hub technology required to connect multiple networked computers to a broadband connection.

There are two types of buyers that usually purchase this type of router. Like you, the first has no plans for networking (connecting) two or more computers to

share a single Internet connection. The second type already has two or more computers in a network and already owns a hub.

The pros and cons of using a router as a firewall vary depending on your need for security, your ability to support yourself, and on whether your DSL provider uses the PPPoE (Point-to-Point Protocol over Ethernet) method of providing a connection. PPPoE normally requires the use of somewhat clunky ISP-provided login software such as EnterNet or WinPoET, but many inexpensive routers provide the PPPoE function themselves. This eliminates both the need for extra software and the need to log on to your connection every time, so using a router ensures the promised experience of an always-on connection. There's one downside, however. You're using a logon method that your ISP may or may not support or understand; in case of problems, you may have to lean on your router's manufacturer rather than your ISP.

Q: *I recently purchased a second computer and want to transfer my e-mail address book from the old computer to the new one. Both have Win98 installed. I know how to send a copy of the address book to a floppy diskette, but how do I get the address book from the floppy to the new computer's e-mail program?*

A: If both computers use the same version of the same e-mail program, the process is simple. Just insert the floppy into the new PC's floppy diskette drive, click the My Computer icon on your Desktop, and click the icon for your floppy drive (often labeled "A:"). Then drag and drop the address book files into the folder on the new computer that contains the new e-mail program's address book.

If, however, the mail program on the new computer isn't the same type and exact same version as on the old computer's, dropping your old files into it may result in an unreadable address book. In some instances, it can even cause your newer e-mail program not to function properly or at all. The same applies to bringing old e-mail messages over. For example, your old PC might use Outlook Express version 4, while the new one uses Outlook Express version 5 or Microsoft Outlook 2000.

Because there are many versions of Outlook, Outlook Express, and other e-mail client applications, this is a common circumstance. In such cases, instead of trying to copy the old files in, you should check the new e-mail program for an "import" feature that simultaneously copies in and converts the files to the new format. Open the e-mail program on your new PC and run a keyword search for "import" in its Help files for details on how to proceed.

Finally, if the address book is small (say, less than 100 names), it may sometimes be simpler to print the whole thing and enter it into the new program manually rather than hassle with conversion issues.

Q: *Much of the text on almost every Web page I encounter lately using Microsoft's Internet Explorer appears in a pretty (but not very readable) font called PT-handlabel. What is perhaps even more puzzling is it doesn't occur on ALL Web sites, just most of them. The sites that are unaffected are usually large, commercial sites. On some sites, only PART of the text is affected. What's going on, and what can I do?*

A: It sounds suspiciously like someone has changed your copy of Internet Explorer's default page viewing fonts. The program's default fonts are Times New Roman and Courier New, and although they may be boring and common, they're very readable.

To revert to your browser's default font settings, click the Tools menu, select Internet Options, and click the General tab in the Internet Options dialog box. Click the Fonts button near the bottom, and make sure the Language Script: field contains the Latin Based option (select it from the pull-down menu if it doesn't). Then select Times New Roman from the list of fonts in the Web Page Font: window on the left and Courier New in the Plain Text Font: list on the right. Click OK, then click OK in the Internet Options dialog box, and your browser will display pages using more conventional fonts.

As to why you're seeing problems on some, but not all, sites: most Web page designers configure their pages to display text in users' default browser fonts, while a few others specify fonts they want to show up. What's more, some of the words you see on Web pages are actually graphic images, attached to the page as a separate file that doesn't have to comply with standard font formats at all. Such text is completely insensitive to what your font choices are, so you'll have to view it the way it is.

Miscellaneous Software:

Q: *I have been shopping around for a PC, and I like the new IBM NetVista A40i. My concern is that I am unfamiliar with Windows Millennium Edition and Lotus SmartSuite Millennium, both of which are included with the PC. I have grown accustomed to my older version of Windows and Microsoft Office. What is your opinion of Windows Me, and how does SmartSuite stack up against MS Office?*

A: We have no reservations where Windows Me is concerned; in fact, it has some advantages over Win98. In particular, it is a bit more stable and has a built-in recovery feature called System Restore that is similar to a utility called GoBack from Roxio. System Restore is handy because it lets your system revert to its configuration settings and contents before a specific event that causes problems, like the corruption or deletion of an important file.

We have heard of users having problems with WinMe, but in the majority of the cases we've seen, they haven't been WinMe's fault. Often, difficulties have been due to users installing WinMe on PCs that don't fully live up to its higher system requirements or that have incompatible hardware installed. (For more information on WinMe, see "The Windows For The Millennium: Windows Me," from Smart Computing, December 2000, Vol. 11, Issue 12.)

As for Lotus SmartSuite, many of us pride ourselves on being individuals, and in many walks of life taking the road less traveled has real advantages beyond just bragging rights.

However, this isn't always so where computers and software are concerned, and although it's true that SmartSuite moves you onto a road less traveled, you should consider carefully before abandoning Office.

Lotus built SmartSuite around AmiPro, a word processor that predates Microsoft Word, and you could make the case that in some ways it is superior to Office. Over the past couple of years, though, office software users have overwhelmingly chosen MS Office over similar packages. IDC reports that in 1999, for example, MS Office captured 79% of the office suite market, with Corel's WordPerfect Office coming in second at 16% and SmartSuite a distant third at just 4%. Of course, sales statistics don't necessarily mean one product is better than another. In this case, however, they do indicate that it may be harder to find a professional consultant or a friend who can show you how to navigate the bumps and do cool things with SmartSuite (or, for that matter, with WordPerfect Office) than if you use Microsoft Office. ∎

Get straight answers to your technical questions. Ask Smart Computing! Send your questions, along with a phone and/or fax number so we can call you if necessary, to: Smart Computing Q&A, P.O. Box 85380, Lincoln, NE 68501 or to editor@smartcomputing.com. Please include all version numbers for the software about which you're inquiring, operating system information, and any relevant information about your system. (Volume prohibits individual replies.)

Answers to users' most common questions.

Broadband Internet Access For Home Users

FAQ: *What is broadband Internet access?*

Broadband access refers to high-speed Internet connections that can transmit multiple streams of content (streaming video, audio, and other data, for example) through a single telecommunications medium, such as telephone wire. Most broadband connections also provide constant Internet access, so there is no phone number to dial and no waiting each time you want to go online.

FAQ: *What's dial-up Internet access?*

Dial-up Internet connections typically require the use of 28.8 to 56Kbps (kilobits per second) modems to connect to the Internet through standard telephone lines. A modem-equipped PC must dial access numbers provided by an ISP (Internet service provider) each time a dial-up user wishes to access the Web. Although some satellite broadband services require users to maintain dial-up connections for sending data (private use satellite dishes can't transmit data, they can only receive it), they aren't usually considered to be dial-up connections in the traditional sense.

FAQ: *Do I really need a broadband connection to the Web?*

For users who only access the Internet occasionally and don't download a lot of content, an affordable, internal 56Kbps dial-up modem, which sells for between $25 and $75, should be sufficient. However, frequent Web users who often download large files and want to view streaming multimedia content can benefit from speedy broadband connections.

FAQ: *What kind of broadband connections are available?*

Many corporations and ISPs connect to the Internet through leased T1 and T3 telephone lines with very fast data transfer rates. Because they can range in cost from $500 to more than $10,000 per month, however, such access options are impractical for most home users. Instead, many choose cable modems or DSL (Digital Subscriber Line) connections for constant, high-speed Internet access and ISDN (Integrated Services Digital Network) or satellite connections for dial-up broadband access to the Internet. Monthly costs for these services typically range from $30 to $200 per month.

FAQ: *How do these broadband connections work?*

DSL connections, such as ADSL (Asymmetric DSL) and SDSL (Symmetric DSL), transmit data over existing copper telephone lines and offers download speeds of 1.5Mbps (megabits per second) and faster. One variety, VDSL (Very High Bit-Rate DSL), provides download speeds up to 52Mbps, although it is generally used primarily for commercial applications because of its prohibitive cost. ISDN services use a special dial-up modem to connect to a dedicated telephone line capable of connection speeds up to 128Kbps.

Cable modems access the Internet through the same cable used for your television connection and in theory can provide download speeds between 500Kbps and 30Mbps (actual speeds are lower, generally between 500Kbps and 1Mbps). Satellite Web services such as DirecPC from Hughes Network Systems establish an Internet connection through a normal dial-up modem, but download Web content through a wireless connection at speeds up to 400Kbps.

FAQ: *Which type of broadband service is best?*

Deciding which broadband connection type is right for you depends on the particulars of available service plans, including installation fees and monthly rates. DSL, for example, can cost as little as $50 per month (with installation fees between $100 and $600), delivers relatively constant connection speeds, and works with most your existing phone lines. However, the physical distance limitations of DSL, which vary from 1 to 10 miles from a central office location, put it out of reach for many users.

Cable modems don't have the geographical restrictions of DSL and are slightly less expensive, costing around $45 per month with installation fees of around $100. But because the cable itself is shared with other subscribers in your area, download times may fluctuate during heavy usage. Many current satellite services only cost around $30 per month, but upload connection speeds are typically only as fast as your existing modem. A few, such as Tachyon and StarBand Communications, do offer upload speeds as fast as 200Kbps, though installation costs can run hundreds of dollars and monthly fees range from $70 to $250 or more per month. ∎

When you need help resolving computer-service problems, bring your questions to Action Editor.

A Pal In PayPal

I placed a bid on eBay for a PC from Alien Distribution. eBay cancelled the auction, but Alien Distribution e-mailed me saying I could buy the PC directly from it for $505. Alien Distribution seemed to have more positive than negative feedback on eBay, so I ordered and paid with PayPal. I've been waiting for the past six weeks and still have not received my PC. No one returns my phone calls or e-mails. Can you help?

HELEN OSTHUS
EVERETT, WA

Alien Distribution's lack of responsiveness and eBay's decision to suspend Alien from selling products suggested that Helen would never see her PC. She filed for a refund from Alien Distribution, and she filed a fraud claim with PayPal. We contacted Vince Sollitto in PayPal's public relations department on Jan. 15, 2001, and he said PayPal would investigate. If PayPal found enough evidence of fraud, it would seize Alien Distribution's PayPal account and use any funds to pay back customers who filed claims. According to a message on Alien Distribution's Web site, the company declared bankruptcy on January 17. We contacted Sollitto to find out how this would affect Helen's claim, and he told us that PayPal had already seized funds and had begun paying back any who had filed a claim against the company. On January 19, Helen received $505 from PayPal.

I ordered a computer system from Quantex on Jan. 5, 2000. When I looked over the invoice, I noticed the system Quantex shipped me had a TNT2 video card instead of the newer GeForce 256 card that the system was supposed to ship with. I also received Corel Office 2000 instead of the Microsoft Office 2000 Small Business Edition. According to the invoice, I was also charged for extra RAM included with the system. I have tried contacting Quantex several times but lately I haven't been able to get through to anyone.

ROBERT M. ONORATO
WINDSOR, VT

Quantex's Web site features a simple logo and a title that reads "Quantex–Closed." Our research found that in

August 2000, a company named Fountain Technologies filed for Chapter 11 bankruptcy. Officially, Fountain Technologies claims to be a major parts supplier for Quantex and admitted that its financial difficulties affected Quantex. There are rumors, however, that there was a closer relationship between Fountain Technologies, Quantex, CyberMax, and Pionex. Regardless of the actual relationships, all of the above companies have since closed up shop. Because the company, based in Somerset, N.J., is no longer in business, we encouraged Robert to file a complaint with the New Jersey Division of Consumer Affairs (http://www.state.nj.us/lps/ca/home.htm). The Web site includes a link to an online complaint form. Readers with complaints about Quantex can also write to the Somerset County Consumer Affairs Division at 20 Grove Street, P.O. Box 3000, Somerville, N.J. 08876-1262 or call (908) 231-7000 (ext. 7400).

In May 2000, my brother-in-law from Australia was visiting the United States. While he was here, he bought Language Force's Universal Translator and mailed in the $30 rebate form. He put his name and my address on the form so I could send the rebate to wherever he was staying. I have been told twice that the rebate is on its way, but I have still not received the rebate.

GARY BARIS
SHEBOYGAN FALLS, WI

We e-mailed Language Force's Customer Support department on Jan. 19, 2001, asking to speak to someone who handles public relations. We received a reply 10 days later saying the rebate center was extremely busy and that we should check the status of the rebate at the company's Web site. We once again asked to speak with someone who handles public relations and, on January 30, we finally received a reply from Steven Pollack, director of channel sales. Pollack apologized for the inconvenience and said the rebate department was extremely busy. He promised to get a rebate check sent out immediately, and Gary received his brother-in-law's check by Feb. 5, 2001.

Are you having trouble finding a product or getting adequate service from a manufacturer? If so, we want to help solve your problem. Send us a description of the product you're seeking or the problem you're having with customer service. In billing disputes, include relevant information (such as account numbers or screen names for online services) and photocopies of checks. Include your phone number in case we need to contact you. Letters may be edited for length and clarity; volume prohibits individual replies. Write to: **Action Editor, PO Box 85380, Lincoln, NE 68501-5380.** Or send e-mail to **editor@smartcomputing.com.** Or fax us at **(402) 479-2104.**

BSOD (Blue Screen of Death)—Jargon for the Windows system error in which the computer freezes and the screen turns blue. The first line of text on the BSOD tells the error in code, and the second line of text translates that into words. In most cases, the user must reboot.

COM (Communications) port—Serial communications ports used to connect devices, such as modems and serial printers, to your computer. COM1 and COM2 are the physical ports at the back of the computer. COM3 and COM4 are "virtual" ports that can be used by internal devices, such as internal modems. You can add I/O (input/output) cards containing additional physical ports to your computer, making COM3 and COM4 accessible to external devices.

form factor—The size of a device in physical terms rather than capacity. Form factor also describes media sizes, such as 3.5-inch floppy diskettes, but more often describes the size and layout of devices' cases. A motherboard's form factor describes its dimensions, as well as its layout, such as the location of slots and ports.

LPT (line printer terminal) ports—A designation derived from the days of the control program for microprocessors (CP/M) and MS-DOS to identify parallel ports that connect computers to printers.

non-volatile—A device, such as a removable storage card, that does not need power to retain its information. Removing the card from a device will not erase or lose the data on the card.

packet writing—A method of recording data to CD-R (CD-recordable) or CD-RW (CD-rewriteable) media in which small chunks of data are recorded at a time, rather than large blocks as with

either the track-at-once or disk-at-once methods. Packet writing is more efficient, and helps reduce the likelihood of buffer underruns. Packet writing is essentially the same method that a hard drive uses when data is recorded to it.

pixel (picture element)—The smallest part of an image that a computer printer or display can control. An image on a computer monitor consists of hundreds of thousands of pixels, arranged in such a manner that they appear to each be connected. Each pixel on a color monitor comprises three colored (blue, red, and green) dots.

push—To send information over a network to a computer without a computer request. Most information is "pulled" from networks, such as the Internet, by users who see information and request it. With push technology, the user subscribes to an information delivery service that pushes the desired information to the user on an agreed-upon schedule.

rip—To digitally extract a song from an audio CD and save it in a computer audio file format. Once a song is ripped, you can convert it to a format, such as MP3 (called encoding), or burn it to a CD-R or CD-RW, among other things.

SD (Secure Digital) cards—At 0.08 inches thick by 0.95 inches wide by 1.26 inches long, SD cards are solid-state, flash memory modules that are slightly thicker than MMCs (MultiMedia-Cards) but are similar in size and technology. However, SD cards can be copy-controlled whereas MMCs cannot, making them SDMI (Secure Digital Music Initiative)-compliant. An SD slot will accept MultiMediaCards, but not vice versa.

WMA (Windows Media Audio)—A file format developed by Microsoft to compete with MP3. WMA files are smaller than MP3s and have greater security potential. WMA files are supported by Windows Media Player and a few other audio playback applications.

New Terms

BeIA—A package of software and tools designed to provide a fast multimedia operating system for Internet appliances. BeIA is made by Be, creators of the BeOS (operating system) lauded for its agility with audiovisual content. Sony's NTE-D101 eVilla Internet appliance is one of the first high-profile devices to use BeIA.

Clipping—The process of saving a Web page to an online storage site. Some online storage services, such as i-drive, have utilities or folders reserved for storing Web pages. Users often come across Web pages that they want to save to view later. Rather than bookmarking or saving the page to the PC's hard drive, users can "clip" it, or save it to an online drive.

DataPlay—A small optical removable cartridge first appearing commercially in 2001. At .12 inches thick by 1.32 inches wide by 1.56 inches long, DataPlay cartridges can store either 250MB ($5 initially) or 500MB ($10-12) and can be copy-controlled. Although the media is only writeable like a CD-R, not rewritable, users can write to DataPlay cartridges in multiple sessions. DataPlay cartridges prerecorded with music or books can even hold additional content users can unlock by paying extra.

Online Irritations

It's Time To Toss A Few Darts At The Internet

BACK IN THE EARLY 1990s, when 486 PCs were king and IBM still thought it had a chance with OS/2, people who "went online" were academics or technicians. A few years later, after Netscape discovered an audience and Microsoft discovered the Rolling Stones, people who went online were early adopters. By the end of the decade, dot-com mania was firmly entrenched, and the people going online were your relatives and neighbors.

Welcome to the 21st century. Even after the dot-com apocalypse, the Internet's popularity grows unchecked. The Pew Internet & American Life Project reports that 56% of all U.S. adults and 45% of all U.S. children now have Internet access. More than 104 million American adults can now go online from their homes.

Now that so many people are online, we have some good news and some bad news to deliver. The good news is that the Internet is a fantastic communications network that gives you access to an unparalleled wealth of knowledge. The bad news is that the 'Net is also a congested snake pit of frustrations. Here is our list, in no particular order, of the Top 10 things we find irritating about the Internet.

1. Spam. The online version of junk mail is more than merely irritating. It wastes time, takes up space, and forces you to delete, delete, delete. It can range from insipid "Make a million dollars a year working two hours a week" claims, to garbage with XXX-rated subject lines. Credit card companies, the kings of regular junk mail, have discovered the Internet and are now killing bytes along with trees. Spare us!

2. Incredibly long domain names that must be spelled perfectly. Now that every word you can think of is attached to "dot com," Internet addresses are getting longer. Thanks to the unforgiving nature of the domain name server system, if you make a single error while typing long names, you're out of luck. Or worse, you reach another site (most likely adult-oriented) that's reserved similar addresses containing typos people are most likely to make. We need to overhaul the domain name system.

3. Sites that feature "talk to us" links, but don't answer their e-mail. WizardMail Marketing Systems tests the e-mail responsiveness of companies in an annual survey; its latest report on 1,000 companies showed that about 70% don't bother to respond to customer e-mails.

4. Sites that block out our browsers' Back buttons. Imagine going into a local store that tried to keep you from leaving when you wanted to; would you ever go there again? We wouldn't, either.

5. Shopping sites that "hide" the shipping charges. When you shop in the real world, you want to know the total cost of your purchase before you're in the checkout lane reaching for your wallet. Why don't all shopping sites include a "quick total" feature that instantly totals the cost of everything in your cart, including the shipping charges?

6. Intrusive, in-your-face advertising. There's a difference between creative advertising that gives us the option of pursuing the topic, and in-your-face ads that take over your browser and force you to sit through long downloads. Companies should concentrate on getting their message across to the right audience in the most appealing way, rather than proliferating bandwidth-hogging ads, or developing technologies that let them kidnap someone's browser.

7. Broken links. We're tired of "going to Atlanta." Not in the literal sense, mind you; it's Web slang for getting the "404, site not found" error message, because 404 is Atlanta's area code. When sites move content around, they break the links to that content. Someone needs to figure out a smart way to avoid, and eliminate, all the links that are broken every day.

8. Poorly designed sites. If companies aren't going to put information on their sites in a way that makes it easy to find what you want, they shouldn't be on the Web, period.

9. E-mail providers that can't keep their servers running. It's not only frustrating to not have access to your e-mail, it can be damaging, too. If you're a businessperson who has ever lost the ability to contact clients or suppliers, you know what we mean.

10. How long it takes to download material. We've used dial-up accounts, wireless services, cable modems, DSL (Digital Subscriber Line) connections, and fractional T3 lines to access the Internet. Even the broadband options can crawl at times. We know it's going to take a while, but we want fiber-optic access at home.

If every frustration is also an opportunity knocking, then entrepreneurs might want to take note of the items in this list. We hear some pounding at the door. ∎

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